

OCTOBER, 1960

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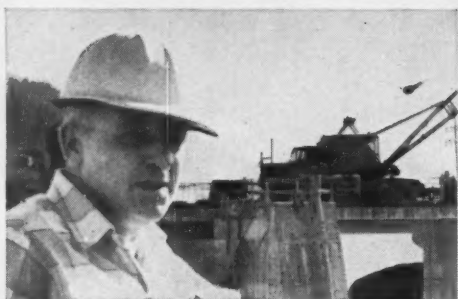
# ***Construction Methods*** AND EQUIPMENT

A MCGRAW HILL PUBLICATION



*In South Carolina, a powerful motor grader scrapes up the rust-red soil and piles it as protective fill around a pressurized digester tank for sewage sludge.*

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## ***Hills Creek Dam to drive two 30,000 K.W. generators***

Hills Creek Dam is part of the \$42 million U. S. Corps of Engineers' Willamette Valley Project near Oak Ridge, Oregon. Green-Tecon, a joint venture of the Green Construction Company, Des Moines, Ia., and the Tecon Corporation of Dallas, Tex., has the earthmoving contract. This job involves 11 million yards of earth and gravel fill on the dam which totals 2400' in length, 1600' at the base and 24' at the crest. The dam will back up a 200,000 acre foot lake and will drive two 30,000 K.W. generators.

Green-Tecon has standardized on B & B "POWERSTEEL" on the job. "POWERSTEEL" is producing more yards on shovels, draglines,

hoist lines, scrapers and dozers! G-T men are enthusiastic about it. For example, Equipment Superintendent Howard Flake (shown above) made this typical comment: "POWERSTEEL" is really some rope! It's giving us excellent service and has certainly cut down on our rope changes!"

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## B.F. Goodrich takes the sting out of steam hose

**Makes steam-handling safe with a hose that can't explode**

**T**HE job this man's doing used to be plenty dangerous. He's using scalding steam to cure concrete locks on a big construction project in southern Ohio. Heat used to weaken steam hose. Sometimes it burst with explosive force, spraying scalding steam, seriously injuring workmen.

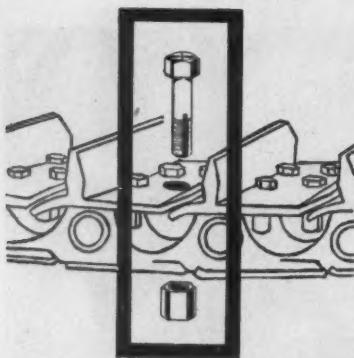
To make a hose that would be safe, B.F. Goodrich engineers developed a new kind of heat-resistant rubber which they used inside the hose and between plies. Then they built layers of fine braided wire for reinforcement right into the hose.

The result is an improved hose—called Burstproof—that makes steam-handling safe. Even when this hose finally wears out after years of service, the steam will leak out, but the hose won't explode!

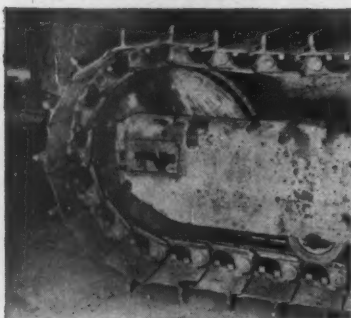
Engineers at the Captain Anthony Meldahl Locks and Dam project, Chilo, Ohio, report "no breakdown whatsoever" with the 3000 feet of Burstproof steam hose they're using. This despite fairly constant use, heat and pressure, and the abuse it takes as it's dragged over sharp concrete and rough, rocky ground.

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OCTOBER, 1960

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#### ON THE COVER

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#### NEXT MONTH

Building 5½ mi of Interstate 81 in northern New York State requires over 1½ million yd of borrow. Obtaining the dirt is easy, but placing it is not. The road runs through a swampy area where scrapers can't get enough traction to spread the dirt. So the contractor builds the embankment to a 2-ft height and advances the toe of the fill a few feet at a time.

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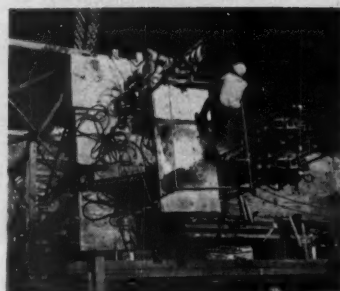
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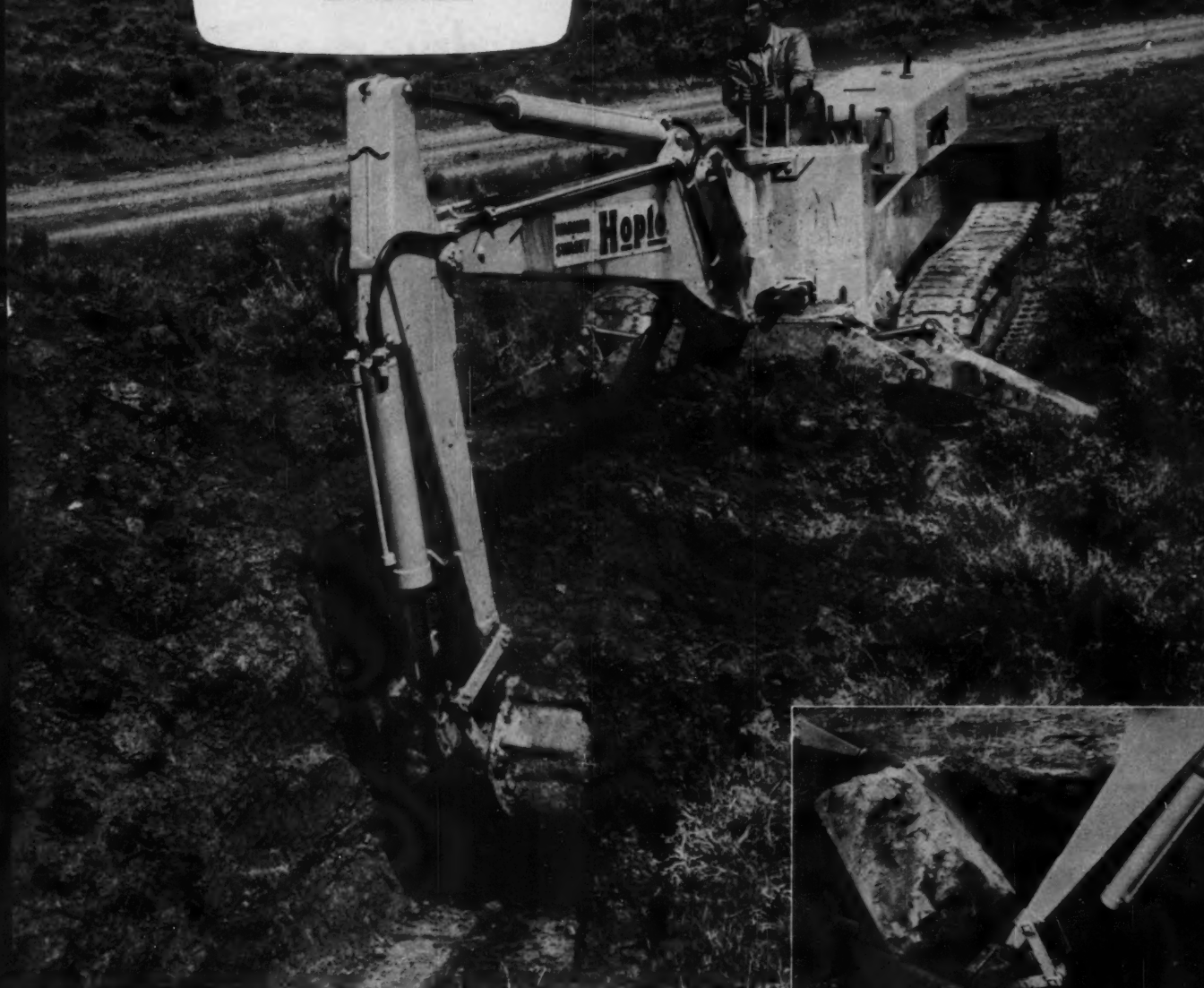
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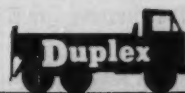


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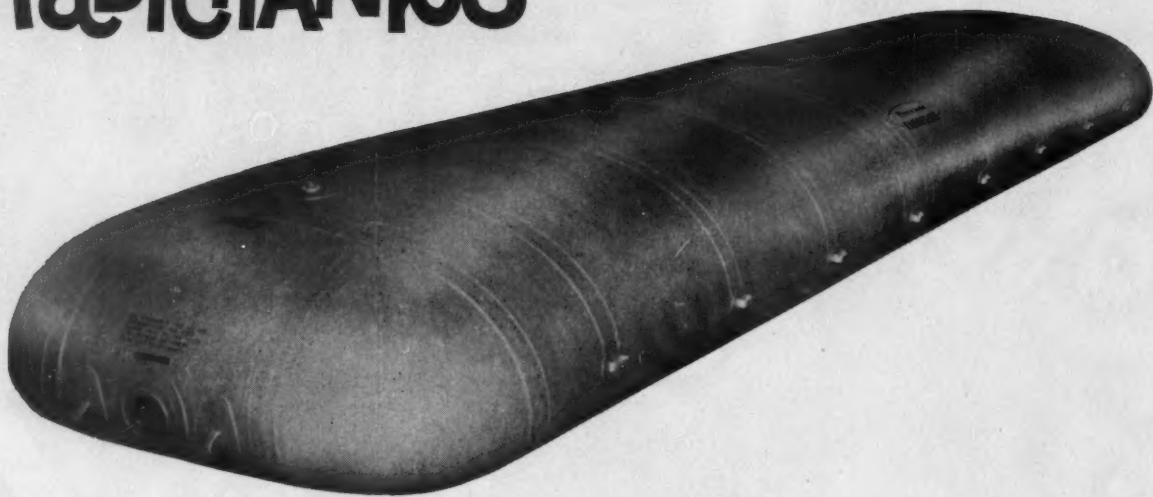
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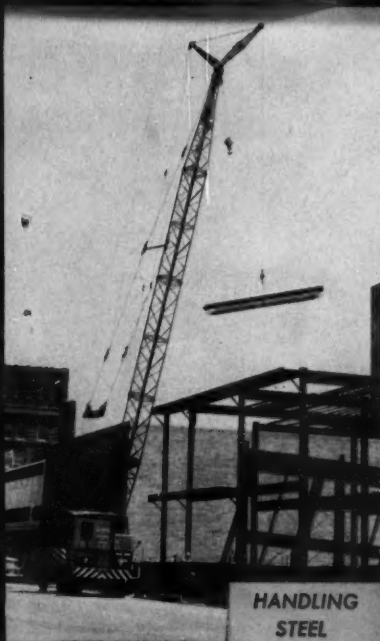
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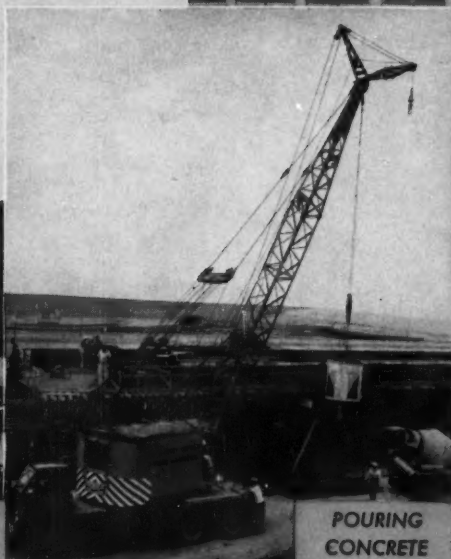
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CONSTRUCTION METHODS





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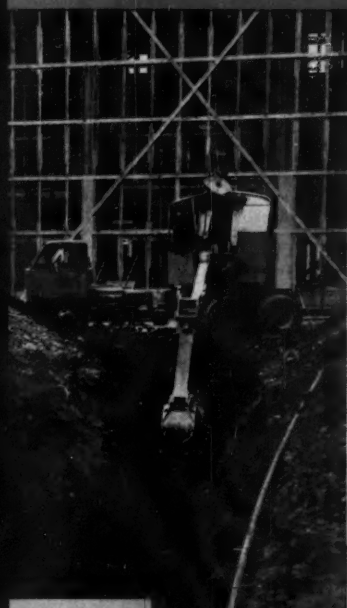
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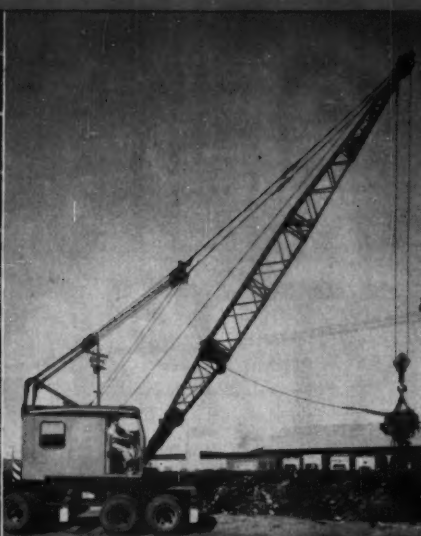
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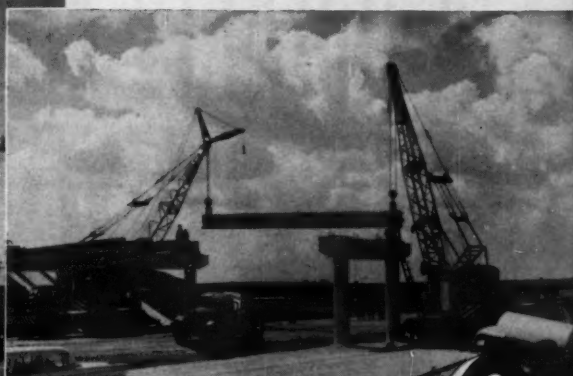
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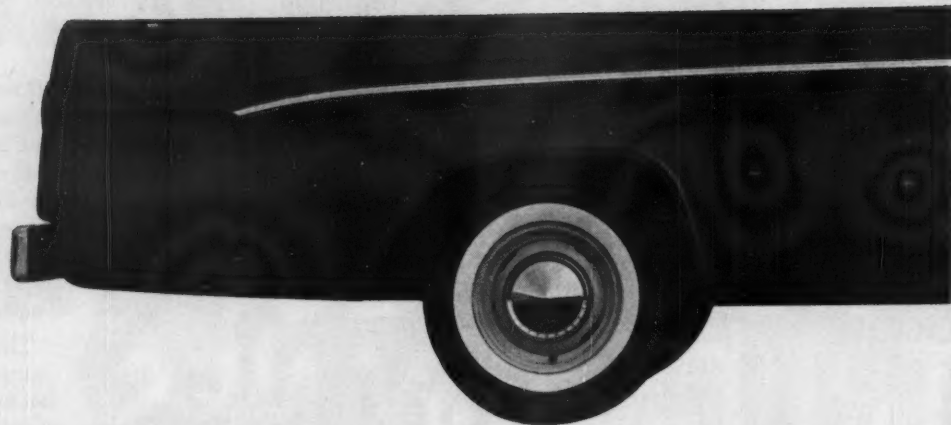
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Capacity

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**TRUCK CRANES**  
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THE FIRST AND ONLY TRUCK WITH  
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## WILL OUR ENGINE, THE NEW SLANT-6, ACTUALLY DELIVER MORE MILES A GALLON THAN COMPETITION?

There's only one way to answer that kind of question, and that's to test the new Dart Pickup against its biggest competition, Ford and Chevrolet. That's just what we did. Result? Time after time the new Slant-6, overhead valve, 225-cubic-inch engine came

out ahead on actual miles-per-gallon.

As for the engine itself, it is slanted 30 degrees from the vertical. This makes possible highly efficient manifolding, both intake and exhaust. Also gives you plenty of underhood work room which, by the way, you'll seldom need. This new engine of ours is a mighty tough customer.

Mounted on the engine, as standard equipment, is an alternating current generator. It will charge the battery even at idle. Because the battery is more fully charged, more of the time, it will last longer. Small thing? Maybe. But it saves you money.



You'll be interested to know that many of the engine parts are aluminum. Things like the water and oil pump housing, the distributor case. Extensive use of aluminum means less dead weight. More payload. More *compact-economy*!

## IS IT TRUE THAT THIS TRUCK IS NEW DOWN TO THE WHEEL STUDS?

Take a look at the picture above. It's unretouched, by the way. See anything familiar? You bet you don't. This one is all-out new. Not new, mind you, for the sake of newness, but functionally new. New cab, new body. New, easier clutching, and shifting, and handling. As a matter of fact this Dart Pickup of ours even has a new soft sound. Wait'll you've had one on the job. You'll agree it's a great new way to work.

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pension is that front tires don't pay the penalty for your pleasant ride. You get every mile of rubber you paid for.

## ANYTHING I OUGHT TO KNOW ABOUT THE REST OF THE '61 DODGE LINE?

Sure! You ought to know about the 1961 Dodge conventional and cab forward models, the four-wheel drive series, door-to-door jobs, the school bus chassis. There's Six and V8 gasoline power. There's Cummins diesel power. There's a weight spread of 4250 lbs. GVW to 76,800 lbs. GCW.

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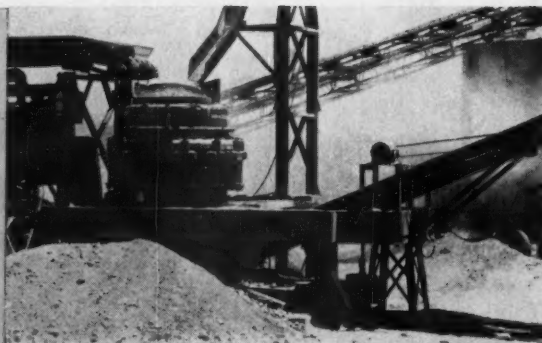
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Symons Cone Crushers are being used in increasing numbers for portable and semi-portable crushing plants. View shows part of a Cedarapids portable crushing and screening plant, utilizing a Symons Cone Crusher. Unit is serving a large Texas aggregate producer.



C-190



(ABOVE:) Tri-level interchange of Northwest and Tri-State Tollways near Chicago's O'Hare International Airport.

(RIGHT:) View of the modern Northwest Tollway bridge crossing the Fox River near Elgin, Illinois.



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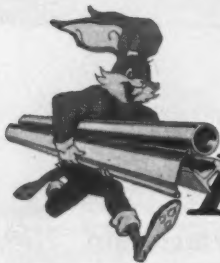


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# Construction News From Washington

Washington, D.C.  
October, 1960

## Hydro Rivals Fight it Out

Plans for two huge, rival hydro-electric projects in the Pacific Northwest are up for decision at the Federal Power Commission. Backers of the High Mountain Sheep Dam, and applicants for a Nez Perce Dam have filed their direct testimony and exhibits with the Commission. Hearing on the conflicting proposals now will develop the record before a decision is made.

Chief points in the competing applications include questions by High Mountain Sheep backers as to whether Nez Perce was safe either structurally or for migratory fish passage; and claims by High Mountain Sheep supporters that their particular project would be more economical to build and operate, and more beneficial in the long-run for the Pacific Northwest.

The Mountain Sheep Dam is proposed by Pacific Northwest Power Co. (made up of Montana Power, Washington Water Power, Pacific Power & Light, and Portland General Electric).

Nez Perce is proposed by Washington Public Power Supply System (composed of public utility districts and electric co-ops in Idaho, Oregon, and Washington).

Direct testimony for the two rival plans was filed Sept. 2. Intervenor and the FPC staff then filed their testimony. Cross-examination is scheduled to begin Oct. 17.

Structural safety of the Nez Perce Project was queried by Charles C. Bonin, engineering manager for Ebasco Services, Inc. He said that "numerous small, steeply-dipping faults are common to the Nez Perce site. He adds that where the dam abuts the nose of rock on the right bank, considerable doubt exists as to its soundness because of the adverse dip of the bedding planes toward the river.

Bonin recommended that a gravity dam would be a more prudent choice than an arch, as proposed by the Washington public group. He emphasized that "both the High Mountain Sheep and Lower Canyon sites are unusually attractive and favorable for arch dams, because of the deep 'V' canyons in which they are situated, the extremely hard granite formations that are firm and solid on the abutments, and the absence of faults. The arch dams as designed are fully competent, safe and durable."

An assurance of Nez Perce's structural safety was made, as well. Vice President Arthur P. Geuss of Harza Engineering Co. said, "The structures proposed for the Nez Perce Project will be stable and safe . . . The foundations for the several structures of the Nez Perce Project are adequate with proper and customary treatment to assure a safe and stable structure from a design standpoint." Two other Harza engineers testified further that the Nez Perce site is geologically adequate for the big dam (700 feet), and that its arch design also is safe and stable.

*continued on next page*

The High Mountain Sheep Dam would be 670 feet high, generate a maximum of 2-million kw of power, store a usable 3.1-million acre-feet of water, cost \$166-million. However, PNP applicants point out that High Mountain Sheep should be considered only in conjunction with the future Lower Canyon Dam, to be competitive with Nez Perce. The two dams together would cost \$257.1-million.

### **More Money for Public Works**

Federal construction programs picked up nearly \$2 billion of needed new money during the short cleanup session that brought Congress back to Washington after the nominating conventions. Under the gun in the final days, Congress and the Administration came to partial agreement on critical items that permitted enactment of \$1.4 billion for public works, \$500 million for college dormitories, and \$50 million for community facilities.

By winning its way on public works, Congress again gave notice that it brooks no letdown in water resources development by the Corps of Engineers and the Bureau of Reclamation. The House and Senate voted funds to start 60 new projects that will cost \$888 million to complete. And in the same bill they approved final amounts for 48 projects worth \$368 million that will be completed this year.

Based on figures in this year's bill, Congressional leaders point out that the net increase in future construction commitments comes down to \$520 million. Spread over several years, as it will be, the net addition is no bigger than it ought to be, they argue, when compared with the going program rate of \$1 billion a year.

This year's bill appropriates \$930 million overall for civil works of the Army Engineers, the highest in history. Nearly \$780 million of the total is earmarked for construction. Reclamation, by comparison, receives less than in some big years of the past, with \$228 million for Bureau construction, plus \$12 million for local projects, out of a total of about \$280 million.

Most of the new starts, too, go to Corps projects. Congress approved funds to initiate construction of more than fifty Army Engineer jobs and to let contracts, also, for a few others that had been partly built in the past. Biggest Engineer start is the \$150 million Lower Monumental Lock and Dam on the Snake River in Washington. Additional dam projects costing from \$11 million to \$65 million each are to be started in Oregon, Arkansas, Kansas, Pennsylvania, West Virginia, and Oklahoma.

### **Dormitory Construction Gets a Boost**

At many colleges, construction of buildings to house students and faculty will be able to move ahead soon to the contract stage on the basis of the \$500 million in additional loan funds that Congress voted. More than 250 applications for \$310 million of construction loans were on hand when the new authorization was approved. Previous funds in excess of \$1 billion had been fully committed.

With new money available, the Community Facilities Administration of HHFA is processing the waiting applications for final approval as rapidly as possible. Additional applications are expected to take up the rest of the \$500 million within the next few months.

**CUMMINS V DIESELS  
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MORE POWERFUL**





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## ADDS A 700HP V12 DIESEL TO A GROWING LINE OF CONSTRUCTION ENGINES



Newest of the V diesels from Cummins is the VT12-700. A real workhorse. It's big in horsepower, but not in size. Truly the most compact, most powerful highspeed engine on the market. And turbocharging permits full rated horsepower up to 10,000 feet.

Like the VT-700, the new, naturally aspirated V12-525 has features that will reduce operating costs. Both 12 cylinder engines have internal fuel and oil lines which eliminate damage to exposed tubing and connections. The revised PT fuel system automatically compensates for wear—needs only the simplest maintenance. A basic block improvement gives you a stronger, more durable engine.

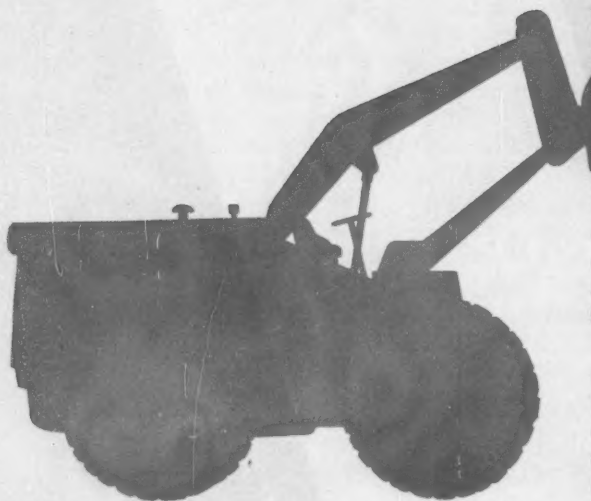
The increased power of these new diesels is a natural advance from the famed VT-600 and NVH-450. For more than ten years these two models have had the field to themselves. Only Cummins could better their proven performance. How? By redesigning the cylinder area to permit higher horsepower at no increase in engine size or engine wear.

This big bore feature is also part of the V diesels at the lower end of the line . . . the V8-350 and the VT8-430. All new, all power from the pan up, they're the first 8 cylinder V diesels in this horsepower bracket built specially for construction equipment. Every kind of application, every operating condition was considered in their design. Service is easy because all accessories are mounted in the 90° angle between the cylinder banks.

Be assured of continued low operating costs with Genuine Cummins Parts and qualified service. For the complete profit story, see your Construction Equipment Dealer or Cummins Distributor.



CUMMINS



**CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA**

International Sales & Service • Cummins Diesel International Ltd., Nassau, Bahamas • Cable: Cummins  
Overseas Factory • Cummins Engine Company Ltd., • Shotts, Lanarkshire, Scotland

6-17-60

V8•350 HP

VT8•430 HP

NVH•450

V12•525 HP

VT•600 HP

VT12•700 HP

# LUBE LOGIC

## These four tips

Keeping equipment on the job 92% of the time is an achievement anywhere. But when you can do it while operating in sandstorm country, over 12% grades out of a 300' deep pit to an additional 200' to top of spoil area, 100 miles from the nearest parts

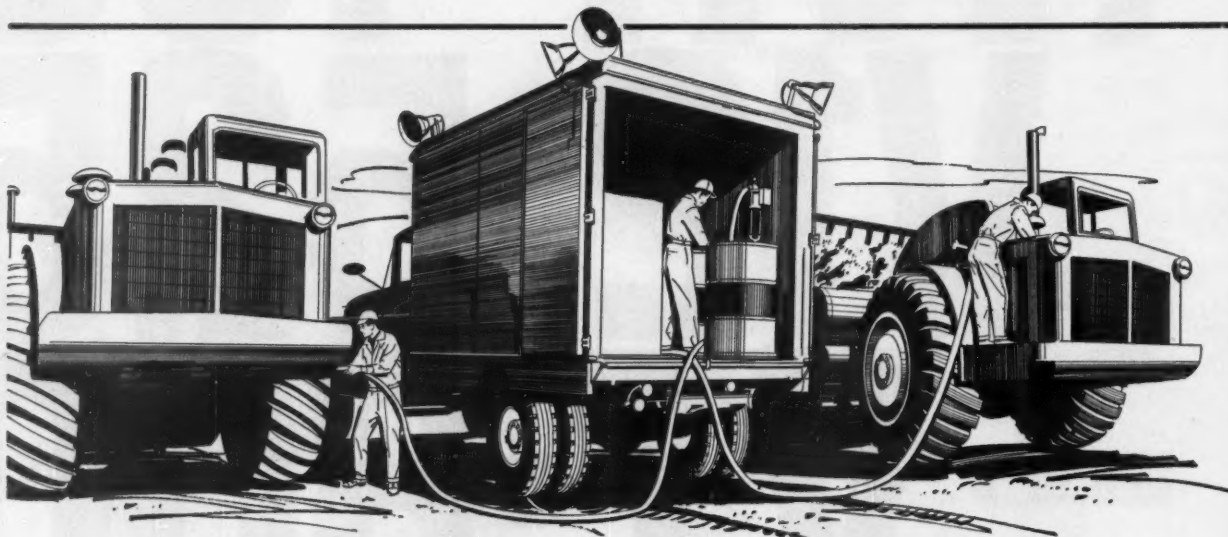
source — and while you're at it remove a million cubic yards of earth every month, it's a record. Maco Construction Co. is doing it right now, and in doing it they've set up such a fine maintenance routine that we think it'll be a help to you to read about it.

### What Maco is doing

Maco Construction Co. is stripping the over-burden from uranium deposits recently located in the Gas Hills area of central Wyoming for Western Nuclear, Inc. This is the largest strip mining operation ever attempted in the state, and calls for the removal of 25,000,000 cubic yards of over-burden. In this large

open pit, the uranium ore lies from 250' to 300' below grade.

Maco is using twenty-two scrapers, six push tractors, two bulldozers, two motor patrols and one backhoe on the job. Texaco fuels and lubricants are used exclusively.



### Clean-sweep lube rig handles two machines at once

Maco personnel designed and developed a lube rig for this job that is just about as complete as they come — and it has the extra advantage of being able to service two pieces of equipment simultaneously, to make the most of the short period between shifts.

The rig is mounted on a 2 ton van that's kept warm in winter with waste heat from compressor and generator engines. It has two sets of hose reels, one on each side, so that two men can lubricate two different machines at the same time.

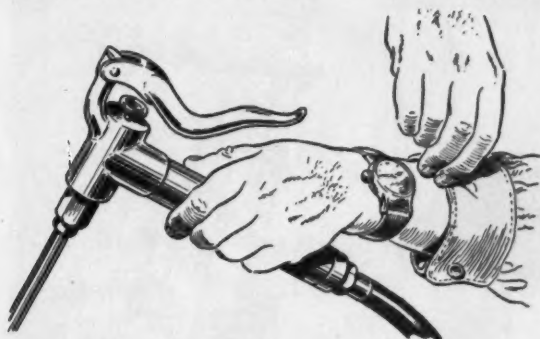
Since Maco has a Texaco Simplified Lube Plan, the

rig can accommodate sufficient lubricant inventory for the project. Air motors drive the lubricant pumps, and a separate electric air compressor furnishes air. A 25 KW diesel generator set mounted in the van provides power for air compressors, power pumps and the four big floodlights. Maco personnel built the tanks that hold motor oil and hydraulic fluid; transmission and lube grease are pumped direct from original containers.

With this lube rig it's possible for the maintenance crew to lubricate all major equipment in the three hour period between shifts, so no work time is lost.



# achieved 92% average availability



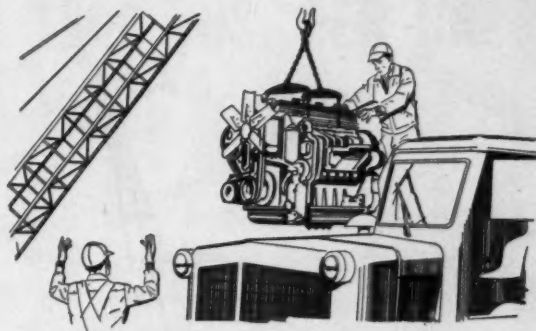
## Clockwork lube scheduling boosts availability

Every machine on Maco's spread is serviced every day, in the period between the close of the day shift, at 4:30, and the beginning of the night shift, at 7:30. The 22 scrapers are lined up in a double row, and the mobile rig passes between them. Every machine is lubricated completely, and air filters are cleaned, at the end of every 10-hour shift. Crankcases are drained every 100 hours. Lube interval on gearboxes and torque converters is 2000 hours.

## Simplified Lubrication Plan protects 33 major units with only five products

TEXACO SIMPLIFIED LUBRICATION PLAN			
1	Ursa Oil Heavy Duty:	engine crankcases	
2	Havoline Motor Oil 10W:	Euclid Torquomatic Drive	
3	Universal Gear Lubricant EP:	all gear boxes and final drives	
4	Crater 2X Fluid:	open gears and wire rope	
5	Martek Multipurpose:	chassis and track rolls	

With their Texaco Simplified Lubrication Plan, Maco gets fast, thorough, systematic lubrication for all major equipment with the smallest possible lube inventory. This inventory simplifies and speeds up application routine because it avoids confusion, minimizes downtime due to misapplication of lubricants, and lets Maco put their lube inventory on the mobile rig for complete on-the-spot coverage.



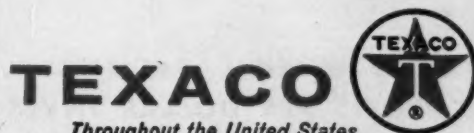
## Replace-don't-repair theory cuts shop time

Although Maco is well equipped to handle emergency repair on the job, they cut shoptime drastically by sticking to an exchange system on major components like engines, transmissions and torque converters. Duplicate spares of these units are kept on hand. Then the defective unit is simply removed intact from the machine and replaced with a new or rebuilt one. All major repairs on engines, transmissions and torque converters are done at the Rawlins shops. Parts are flown in via Maco's own plane from headquarters in Rawlins, Wyoming.

Minimum downtime on equipment is the principal advantage of the exchange system, but not the only one. For instance, engine repairs can all be made in a fully equipped shop, without having to rush or make temporary repairs; and this system also ensures full availability of the field maintenance crew for their routine work.

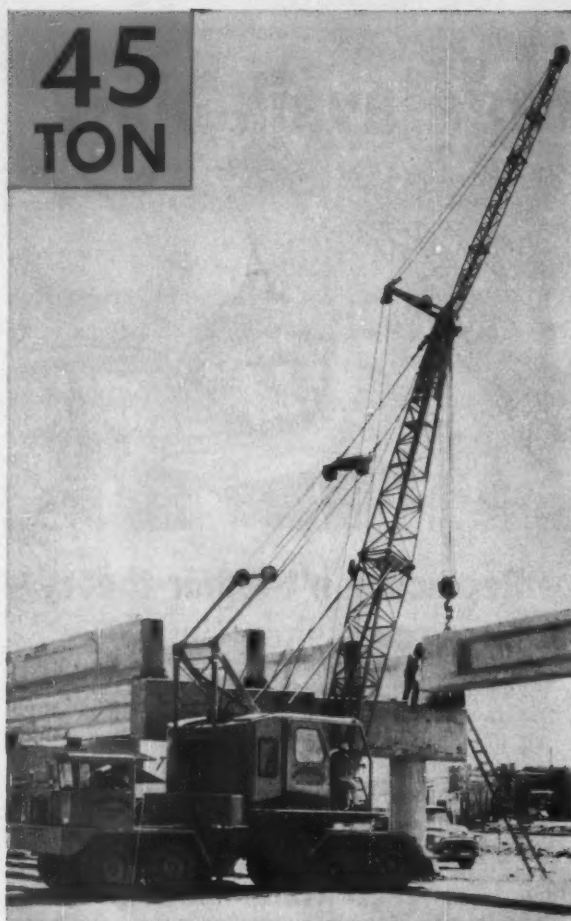
## Texaco Lubrication Engineers

There are 2,300 Texaco Distributing Plants in the U. S. ready at any time to help you develop a Texaco Simplified Lubrication Plan for your next job. Since every Texaco Plan is designed to lubricate specific equipment on a specific job, you'll get the best results by consulting a Texaco Lubrication Engineer. Texaco Inc., 135 East 42nd Street, New York 17, N. Y.



Throughout the United States

Canada • Latin America • West Africa



Koehring 445 walks precast bridge member into place on Colorado highway job.



Koehring 555 on Long Island expressway contract sets heavy concrete manhole.

## UNDER LOAD OR ON THE ROAD NOTHING HANDLES LIKE A KOEHRING

Koehring heavy-duty truck cranes give you the mobility and stability to get toughest lifting assignments finished quickly. Mounted on rugged 4-axle truck, they convert quickly from fully equipped crane to roadable machine for traveling. Counter-weight, boom, and outriggers can be easily removed to reduce machine weight to meet road limits.

You get extra work capacity for safe, sure lifting and spotting. Booms have combination pin-pad connections . . . combine safety of bolted connections with quick-change advantages of pin connections.

For complete information, get in touch with your local Koehring distributor or write to us for catalogs . . . do it soon.

K34

**MORE WORK CAPACITY...**  
**MORE PROFIT PER DOLLAR INVESTED**

**KOEHRING**  
DIVISION OF KOEHRING COMPANY  
Milwaukee 16, Wisconsin

# **BUFFALO-SPRINGFIELD KOMPACTOR COMPACTS MORE THAN 1200 YDS. PER HR. COSTS ONLY 2¢ A YARD TO RUN**

**It's been doing it and proving it for years — for contractors all around the country.**

Self-propelled, field-proved Kompactor meets job density specs with fewer passes — costs less to run. It operates on an interrupted pressure principle, staggered rows of heavy steel pads direct all compaction effort downward. Result: more uniform density of materials, no displacement of materials due to "bull-

dozing" ahead of the wheels, less time and effort required to meet compaction specifications.

Another reason for Kompactor's widespread popularity is its ability to wheel close to culverts, walls, and abutments eliminating costly and time-consuming hand tamping. And since the Kompactor is self-propelled, doesn't tie-up expensive equipment in compacting work. Ask your Buffalo-Springfield distributor for details, or write for booklet.

**BUFFALO-SPRINGFIELD CO.**  
**Springfield, Ohio**



**K** A Division of  
**KOEHRING**  
Company





# DIESELS GO!

on winter's  
coldest  
days



## ZERO START

### DIESEL STARTING FLUID INJECTORS



**PUSH-BUTTON  
STARTING**



**THERMOSTATIC  
CUTOFF**

New for '61—the first and only push-button Diesel Starting Fluid Injector with automatic cutoff. Install this dependable, low-cost unit on all your Diesels. Eliminate cold-weather downtime—keep engines working a full shift.

A Zero Start Diesel Starting Fluid Injector can pay for itself in just one winter morning. Thermostatic cutoff prevents misuse.

See your equipment dealer now, or write

**PHILLIPS**  
MANUFACTURING COMPANY

8200 Grand Avenue  
Minneapolis 20, Minnesota

## Job Talk...



### Diverse Spreads Move Big Yardage Fast

Two widely different but equally effective earthmoving spreads are enabling A. J. Baltes, Inc., of Norwalk, Ohio, to move as much as 30,000 yd of material per 18-hr day on a 3.8-mi section of Interstate 75 just south of Dayton.

The \$3.9-million contract calls for 2,285,000 yd of excavation including 1,250,000 yd of borrow. In one borrow pit Baltes has backed a Kolman loader with a 60-in. overhead conveyor into the side of a hill that will yield about 250,000 yd of material. Six dozers push material from the top of the slope to feed the conveyor, the hopper of which is buried in the landslide

of loose material at the bottom.


The loader keeps a fleet of 20 Euclid bottom dumps busy high-balling the material some 3,500 ft to the fill. Powered by a 125-hp diesel engine, the conveyor loads a bottom dump with 13 to 15 yd in about 15 sec.

The loader moves on a few hundred feet to another location beside the hill as soon as the dozers have to push uphill to load its hopper. Accomplished during shift changes to take advantage of unproductive time, the move and setup takes about 30 min on the average.

*continued on page 27*

**CONSTRUCTION METHODS**

How protection in depth helps cut compensation costs



## Shortening the long road back

Any serious injury, from a critical sprain to a severed spinal cord, can incapacitate a worker indefinitely. The faster he can be restored to useful activity, the less the human suffering, the lower your medical expenses and compensation costs. Since 1943, Liberty's world-renowned rehabilitation services have helped many thousands of seriously injured workers return to work (nearly 4,000 were rehabilitated at our two fully-staffed centers alone). Rehabilitation is but one of the many Liberty Mutual services that add up to protection in depth. To learn more about Liberty's protection in depth and how it can help lower your business insurance costs, contact your nearest Liberty Mutual office.

Look for more from

# LIBERTY MUTUAL

LIBERTY MUTUAL INSURANCE COMPANY • LIBERTY MUTUAL FIRE INSURANCE COMPANY  
HOME OFFICE: BOSTON

*...the company that stands by you*

Business Insurance: Workmen's Compensation, Liability, Group Accident and Health, Fire, Fleet, Crime • Personal Insurance: Automobile, Fire, Inland Marine, Burglary, Homeowners

Circle 23 on Reader Service Card

Slash handling costs outside, inside, all around the job!

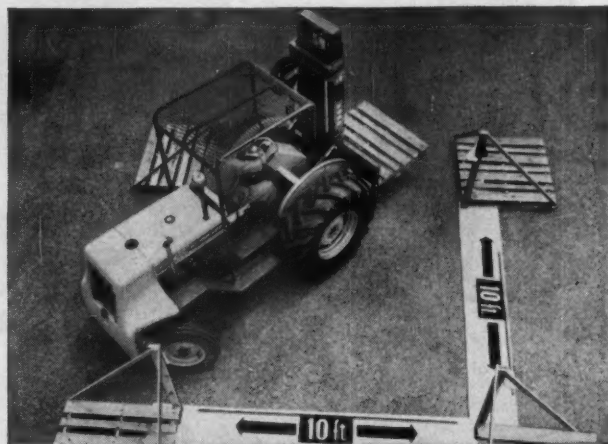
# NEW FORD 4000 HEAVY DUTY FORK LIFT...

- 4,000 lbs. rated load at 24" load center.
- 5,000 lbs. rated load at 15" load center.
- Equals or exceeds fork lift industry recommendations for stability and capacity.
- Stability, ruggedness and traction for fast, safe material handling on rough terrain.
- Designed to cut outdoor and indoor handling costs of building contractors, industrial plants, concrete product producers, building supply yards, loggers.
- Choice of gasoline or diesel engine with 172 cu. in. displacement.
- Standard stacking heights—10, 12, 16 and 21 ft.
- Two and three stage masts.
- Adjustable forks, 42" and 60" face plates.
- 14 x 24 eight-ply drive tires for solid traction, good flotation.
- 7.50 x 16 eight-ply steering tires.
- 4-speed reversing transmission; up to 15 mph transport speed.
- Rugged full length frame.
- 7,000 lbs. capacity steering axle.
- Total weight, with 4,000 lb. load—approximately 13,700 lbs.
- 2,300 lbs. cast bumper-counterweight.
- 15-gallon capacity gear type pump.
- Stack type 3-spool control valve.
- 6" side shift, standard equipment.
- Mast tilts 13 degrees back, 7 degrees forward (tilt angles reversible with special attachment).
- Safety valve prevents accidental free fall of carriage.
- Adjustable cushioned seat, convenient controls and full hydraulic power steering boost operator efficiency, minimizes fatigue.
- Excellent operator vision.

*Ford Motor Company*



**Customized attachments**—Standard accessories include overhead guard and load guards for 42" or 60" face plates. Special purpose attachments and masts available on special order basis.

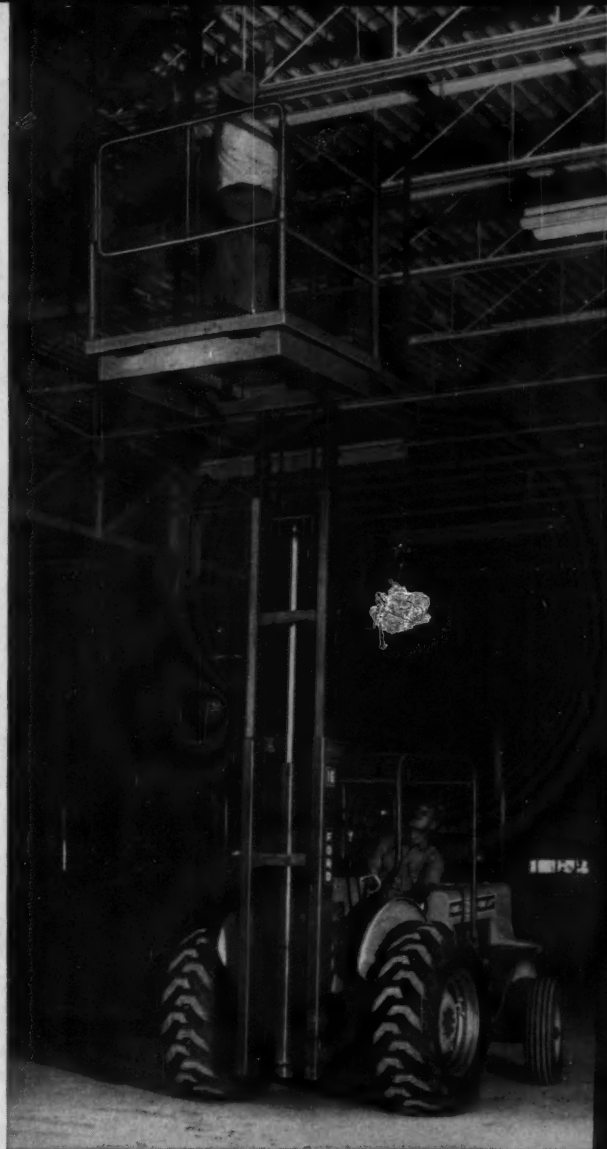


**Excellent maneuverability**—Full hydraulic power steering, individual drive wheel brakes and a tight 11 ft. turning radius are typical of the many features which give Ford excellent mobility.

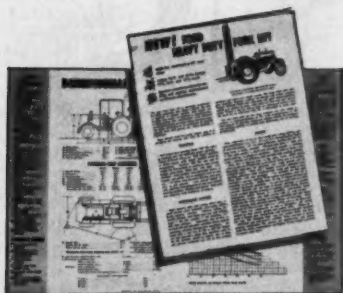


**High and inside...** Five basic models of the new Ford heavy duty fork lift truck are available in 10 ft., 12 ft., 16 ft. and 21 ft. lift heights. The 12 ft., 16 ft. and 21 ft. models have 3-stage telescoping masts; 2-stage masts are available for 10 ft. and 12 ft. models.

**...or low and outside**—Ford's 3-stage masts provide high lift with unusually low collapsed heights. For instance, the 3-stage 12 ft. model collapsed height is *only 6' 5"*. Even with the overhead guard, the unit will still enter an 8' door. Ford can work both outdoors and indoors for you—can eliminate, in many cases, the need for separate indoor and outdoor units!



Your copy of the new Ford Fork Lift Specifications is ready for mailing!



**FORD**  
TRACTORS AND EQUIPMENT  
FOR 101 INDUSTRIAL JOBS

Ford Industrial Equipment Department CME-176  
Ford Motor Company  
2500 E. Maple Road  
Birmingham, Michigan

☐ Send Ford Fork Lift "spex"    ☐ Send name of nearest dealer  
☐ Arrange for demonstration on my job

Name \_\_\_\_\_

Company \_\_\_\_\_

Position \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Circle 25 on Reader Service Card

## ENGINEER'S FIELD REPORT

**CHEVRON PRESSURE  
PRIMER SYSTEM**  
**JONES-TOMKINS CO.**  
FIRM **Cougar, Washington**

# Special cartridge fires giant diesel in seconds



At world's highest earth-filled dam construction site near Woodland, Washington, three giant diesel shovels get immediate starts from Chevron Pressure Primer System, reports Jones-Tomkins, general contractors. System helps speed shovel's fill-borrowing operations for this \$51,000,000 project.

Five-year-old 4500 Manitowoc Speed Crane (above), powered by Caterpillar 350 h.p. V-12 D397 engine, operates 18 hours a day, six days a week, loading 21-yard dump trucks in just 70 seconds. Jones-Tomkins uses Standard fuels and lubricants exclusively on this job.

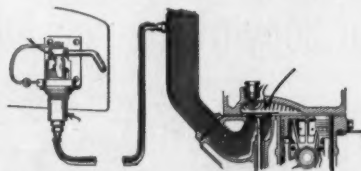


**Chevron Pressure Primer Discharger** mounted on instrument panel (left) operates satisfactorily despite heavy vibration, reports shovel foreman Henry Watson (right). "We've had absolutely no trouble with this system. The Chevron Pressure Primer System eliminates dust clogging and allows fluid to reach the cylinders quickly. It's the practical way we've found to get these rigs going."



TRADEMARKS "CHEVRON" AND CHEVRON DESIGN REG. U.S. PAT. OFF.  
**STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20**  
**THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey**

### Why Chevron Pressure Primer System assures fast starts



- Volatile Chevron Priming Fuel atomizes in induction system at all temperatures even at -65°F, no hand-pumping required.
- Pressure or weakest spark from engine fires mixture.
- Simple rugged air-tight discharger prevents Priming Fuel leakage.
- Small, fireproof, pressurized steel cartridges protect Priming Fuel from water and dirt.

**For More Information** or the name of your nearest distributor, write or call any of the companies listed.

**STANDARD OIL COMPANY OF TEXAS, El Paso**  
**THE CALIFORNIA COMPANY, Denver 1, Colorado**

**JOB TALK . . .**  
continued from page 22

Accounting for a substantial share of the remaining yardage being moved on the job are six brand-new Allis-Chalmers TS-360 scrapers. Two of them follow behind the Kolman loader and complete that hillside cut. The other four team up with two Caterpillar DW20 and seven DW21 scraper units at work on another cut a mile away.

In both places the new TS-360's average a heaping 25.6-yd load per trip. Loading time is about 45 sec with a single pusher, proportionately lower with tandem pushers. At the fill the scrapers with forced ejection lay 8 to 10-in. lifts in about 15 sec—about half the time required to empty the bottom dumps, which frequently have to shake out loads when material sticks to the sides of the wagons.



**Truck-Mounted Backhoe  
Explores Anywhere**

A  $\frac{3}{4}$ -yd Hy-Hoe backhoe mounted on a 6x6 Army surplus truck pays its way by going just about anywhere on cross-country explorations. The rig is of such central importance in the operation of its owners, Hi-Ho Excavators of Oroville, Calif., that they named their company after the machine.

The versatile rig regularly makes off-highway sorties of from 2 to 10 mi to locate clay, gravel, and quarry rock for construction projects. Besides exploratory work, the backhoe handles excavations for septic tanks, fuel tanks, sewers, foundations and the like.

Frank Shipe, a partner in the firm, reveals that their Hy-Hoe 380 grosses an average of \$3,500 per month. And records show that operating costs are about 10% less than with the crawler-mounted rig they formerly used.

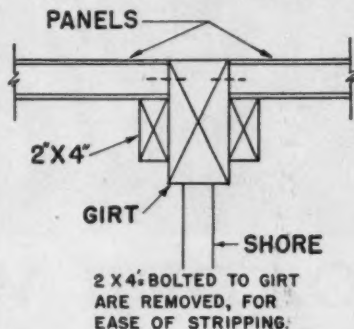


## Slab Forming with Symons Steel-Ply Forms

*Steel-Ply Panels Used Twice Per Month . . .*

*Material Costs Reduced to 10 Cents a Sq. Ft.*

Slab forms were stripped in 10 days without disturbing the support shoring; still met specifications calling for 28 days of slab support.



When constructing apartments on the campus of Stanford University, Palo Alto, California, the contractor Howard J. White, Inc. had one big problem . . . how to reduce slab-forming costs. Savings had to be made on the main 15-inch foundation slabs of the three buildings. And on the basement walls.

Credit for developing a way to use Symons Steel-Ply Panels for slab form-

ing goes to White's top management, and to Superintendent Buck Mills. The Oakland office of Symons Clamp & Mfg. Co. also helped appreciably with advice on engineering design.

Here's how it was done. 4 x 6 girts, laid longitudinally with the floor slab, are first set in place on shores and flush with the bottom of the slab. When the slab is poured, it bears directly on the timber girt. Next, 2 x 4's are bolted to the girt to form a ledge. Symons 4 ft. Steel-Ply Panels, being light (42 pounds), are easily dropped in place on the 2 x 4 ledge. No connecting hardware is used on the panels . . . carpenters simply drive a nail through a form-hardware opening to the girt, on each panel, so that when the 2 x 4 ledges are removed, the panels will not fall.

16,000 sq. ft. of rented Symons Panels were used in slab forming. Used twice per month, material costs were reduced to 10 cents per square foot.

For the complete story on slab forming, just send in your request on your company letterhead. Symons Steel-Ply Forms can be rented with purchase option.

 **Symons CLAMP & MFG. CO.**  
4255 Diversey Avenue Dept. K-O Chicago 39, Illinois

Warehouses throughout the U.S.A.

**MORE SAVINGS FROM SYMONS**

Circle 21 on Reader Service Card





## ONLY LOADER WITH 5-WAY

**Allis-Chalmers tractor loaders offer extended service life, far less down-time by thoroughly cleaning all air and filtering all hydraulic oil.**

Unmatched filtering protection—that's what you get in all Allis-Chalmers tractor loader models.

Air is double filtered by:

1. air breather
2. air filter

Hydraulic oil is cleaned by:

3. full-flow micronic filter
4. conical screen
5. magnetic filter

This 5-way filtering protection brings peak hydraulic operating efficiency . . . extended service life.

*Circle 29 on Reader Service Card*

**move ahead with**



## HYDRAULIC PROTECTION

Complete filtering protection is just another way Allis-Chalmers tractor loaders set the pace in the loader field. They also feature: *pin-connected axles* that eliminate shifting and rolling under load; *exclusive single-lever control* of all speed and direction; *safe, well-located dump cylinders* that are up and away from dirt; *extra reach* for easier dumping and *added stability* for moving big loads without tipping or spilling.

Your Allis-Chalmers dealer can give you facts on all 5 tractor loader models—ranging in capacity from 1 to 5 cu yd, in power from 76.5 to 130 horsepower. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



# ALLIS-CHALMERS

... power for a growing world



# B.F. Goodrich helps forge a new route through the redwoods



**MORRISON-KNUDSEN EARTH-MOVERS** climb 42% grade after delivering 35 tons of fill dirt. Equipment works 18 hours a day, 6 days a week, to speed completion of Redwood Highway bypass near Weott,

California. B.F. Goodrich Rock Service tires will help move 3,300,000 cubic yards of earth over rocky, mountainous terrain, have performed so well already that many have been retreaded *twice*.

**TWO-LANE U.S. HIGHWAY 101** snakes through California's famous forest of giant redwoods—a tourist's delight but a trap for through traffic. To remedy this, a new 4-lane bypass is under construction, 7.5 miles of it by Morrison-Knudsen Co., Inc. On M-K equipment you'll find B.F. Goodrich Rock Service tires.

This \$5-million project calls for the excavation of 3,300,000 cubic yards of dirt. Earth-movers haul as much as 35 tons at a clip over ripped rock, twist up and down

grades as steep as 42%. Massive B.F. Goodrich Rock Service cleats get a firm, non-slip grip on the ground, pull in forward or reverse.

For work in razor-sharp, tire-killing rock, B.F. Goodrich builds the Rock Service with new Cut Protected compound. BFG Flex-Rite Nylon cords withstand double the impact of ordinary materials, resist heat blowouts and flex breaks. Result: more retreadable tires. Morrison-Knudsen finds Rock Service tires often can be retreaded *twice*.





**FOREMAN SETS GRADE STAKES** as BFG Rock Service tires shoulder another 35-ton load of fill dirt. Finished 4-lane highway will be 60 feet wide, surfaced with 4-inch-thick asphalt, will have 4 bridges and 100,000 feet of 2' horizontal water drain pipe. B.F. Goodrich on-the-job tire service is available on projects such as this.



**RETREADED B.F. GOODRICH ROCK SERVICE TIRE** in foreground has already given over 2,200 hours of service (some tires on the project have worked over 3,200 hours). BFG builds the Rock Service in 3 compounds — Regular; Cut Protected (CP) for short hauls over jagged rock; and Heat Resistant (HR) for longer runs at higher speeds.

Supplying contractors with longer-wearing BFG tires and providing on-the-spot tire service that saves time and money are everyday jobs for your B.F. Goodrich Smileage dealer. On many projects B.F. Goodrich supplies everything from tires to boots to belts through its new Unified Contractors Program. Whatever *your* need, it will pay you to check first with your BFG dealer. You'll find him listed under Tires in the Yellow Pages. Or write *The B.F. Goodrich Company, Akron 18, Ohio.*



Specify B.F. Goodrich  
Tubeless or tube-type tires  
when ordering new equipment

**Smileage!**

Circle 31 on Reader Service Card

## ANOTHER BIG JOB AGAIN MANITOWOCS DOMINATE!

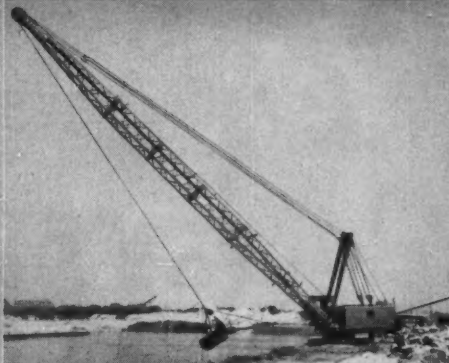


Two of the Hardaway Contracting Co. Model 3900 cranes at the Kentucky lock and dam site.

In Louisville, Ky. work has been progressing for over two years on reconstruction of Lock No. 41, just one phase of a billion dollar, long range Ohio River navigation and improvement program. Initial efforts on the complicated, \$19,300,000 Louisville job include the construction of four huge cofferdams.

General contractor is the Hardaway Contracting Co., Columbus, Ga. under supervision of the Louisville District, U. S. Corps. of Engineers. The Hardaway Company has been using two Manitowoc Model 3900 cranes exclusively for the cofferdam construction, handling 13 ton templates and the 60 ft. steel sheet piling to form the coffer cells. The cranes also have been placing concrete for both guard and lock walls. An estimated 375,000 yds. of concrete will have been placed before the job is completed.

On another phase of the Louisville project, Traylor Bros., Inc., Evansville, Ind. has been using a Manitowoc Model 4500 Vicon dragline, equipped with a 147 ft. boom and a 5 yd. bucket, for widening and deepening a mile and a half of the upstream approach channel. The drag moves approximately 375 yds. of mud and rock per hour, widening the channel from 200 to 500 ft. An estimated 3,500,000 yds. of earth and 200,000 yds. of rock will have been removed when the job is finished in late winter of 1961.



Manitowoc 4500 Vicon dragline dredges 375 yds. of mud and rock per hour.

Commenting on the performance of the Vicon dragline, Mr. Ford Dyer, Project Manager for Traylor Bros., Inc., said, "We find that the Manitowoc maneuvers better than any other machine of comparable size and that it works 10 to 12 per cent faster." In addition to the dragline, Traylor Brothers have used two Model 3900 Manitowoc cranes at the job site.

On multi-million dollar jobs like this or everyday "bread and butter" jobs, Manitowocs are consistently the choice of contractors needing big output at the lowest possible cost. Be sure to call your Manitowoc distributor when you are ready to improve your equipment fleet.

MANITOWOC

**Manitowoc**

### MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)  
Manitowoc, Wisconsin

SHOVELS  
1½ to 6 YDS.

CRANES  
25 to 125 TONS

DRAGLINES  
1½ to 7 YDS.

TRENCH HOES  
1½ to 3 YDS.





**!!HERE!!**  
**THE GREATEST SHOW ON WORTH**  
**'61 CHEVROLET STURDI-BILT TRUCKS** \*\*\*\*\*  
\*\*\*\*\*  
\*\*\*\*\* JUST OUT!! JUST THE WAY YOU WANT \*\*\*\*\*



TH !!!

\*\*\*\*\*

NT 'EM!



## **PROVED WORTH MORE BECAUSE THEY WORK MORE**

**1961 Chevrolet trucks roll in  
on a wave of owner acclaim!**

Sure enough, a gigantic advance in truck design has shortened every route in America. It began just a year ago, when the first Torsion-Spring Chevy nosed out onto a highway. With a vastly different truck design, featuring torsion-bar independent front suspension, this totally new Chevy was a big winner right from the start. Thanks to its amazing bump-cushioning ability, it did just about everything better. Got more work done in a day, for instance, with a floating ride that all but assured faster schedules on any roads. Slashed maintenance with a jolt-free ride that drastically reduced wear on truck components. Owner's earning power began to soar and word got around. This one caught on fast. So fast, in fact, that there are now, already, *nearly 300,000* Torsion-Spring Chevies putting out this new kind of working ability on tough jobs all over America. It's been a giant step forward in trucking and it's only the beginning. *Because, here for 1961, are Chevrolet trucks with even more of the worth-more, work-more performance that's won such wide owner acclaim over the past year. Even more strength, even more stamina—and an even wider range of models. Look 'em over here—see how a Torsion-Spring Chevy can smooth out that rough hauling job of yours . . .*



**1961 Chevrolet light-duty trucks**  
**MORE MODELS!★★★★**  
**MORE WAYS TO SAVE!**

New worth-more pickups, panels, Suburban Carryalls, Step-Vans, forward controls and chassis-cabs ★ Work-proved Torsion-Spring Ride\* ★ 3 new go-anywhere 4-wheel drive models ★ Famous gas-saving Thriftmaster 6 ★ Tough, short-stroke Trade-master V8 ★ Roomy, rugged Comfort-King cabs ★ Spacious bodies that carry more cargo ★ Big, safe Torque-Action brakes ★ Brawny box-section frames, big-capacity axles!

\*All series except K10, K20, P20, P30.



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**1961 Chevrolet heavy-duty trucks**  
**MORE MIGHT!★★★★★**  
**MORE EARNING POWER!**

51 mountain-moving heavy-weights ★ Choice of Conventional, tilt or Low Cab Forward models ★ Tough Torsion-Spring Ride ★ Best-built big-tonnage V8's going ★ G.V.W.'s up to 36,000 lbs., G.C.W.'s up to 51,000 lbs. ★ Massive K- and X-braced frames ★ Advanced Eaton-Hendrickson tandem units ★ Rugged rear axles up to 18,500 lbs. in capacity ★ High-capacity variable-rate rear springs!







*1961 Chevrolet medium-duty trucks*  
**MORE WORTH! ★★★★★**  
**MORE WORKING ABILITY!**

88 big-saving models to choose from ★ Owner-acclaimed Torsion-Spring Ride ★ Big Comfort-King cabs ★ Sure-saving Jobmaster 6 power ★ Durable Taskmaster V8 power ★ Easy-wheeling Low-Cab-Forward models ★ Big-payload Chevrolet tilt cab trucks ★ Work-saving Powermatic transmission ★ Sturdy-built frames and axles!





# MORE MIGHT! MORE MODELS! MORE WAYS TO SAVE! NEW CHEVROLET TRUCKS FOR '61!

They're worth more than ever before because they'll *work* more than ever before! Here's Chevy for '61 with a longer line of models, extra strength and stamina . . . even more of the smooth, tough performance that's won high praise from truckers all over America!

**PICK FROM 189 MODELS!** More models than ever before—work-proved dollar savers in every weight class! 1961 Chevis for every hauling chore in the book include three new long-wheelbase 4-wheel-drive models, sturdy Stepside and Fleetside pickups, spacious panels, versatile Suburban Carryalls, handy Step-Vans and forward controls, tough chassis-cabs of all sizes, mountain-moving tandems. Somewhere in this long, *long* line you're sure to find the one truck that makes the most sense on your job!

**OWNER-PROVED TORSION-SPRING RIDE!** It puts an end to I-beam axle shimmy! Independently suspended front wheels step right over bumps, tough torsion bar springs soak up jolts. New smoothness improves virtually every phase of performance; speeds up schedules, cuts truck wear and maintenance expense, reduces cargo damage and driver fatigue! Owners report that there's never been anything like it for high-profit hauling—and it's *standard* on every 1961 Chevrolet model, except Forward Controls and 4-wheel drives!

**STRONG, ROOMY CABS THAT HELP BOOST YOUR WORK OUTPUT!** Rangy drivers ride in comfort with stretch-out room in all directions. Extra hip room, shoulder room, leg room and head room. Seeing is safe and easy through a whopping-big wraparound windshield. The seat's a beauty, too—a full 59½" wide with a spring combination inside that gives just the right support. (And for the last word in working comfort, special 6" foam rubber padding is optional at extra cost.) And these

cabs are *rugged*, with a build that includes all-steel construction, double-panel roof, double-walled cowl housing and box-section door pillars.

**TOUGH TRUCK CHASSIS—BRAWNY BASIS FOR BIGGER PROFITS.** The best sellers have never been huskier, starting with the massive, truck-built frames that add stamina to every chassis. In medium- and heavy-duty models, rugged self-adjusting variable-rate rear springs help smooth out big-tonnage hauls. Quality features galore boost truck life in every Chevrolet truck for '61. Extra-big brakes give faster, surer stops and last longer. Precision wheel balance makes steering easier, lengthens tire life. Smooth, durable Synchro-Mesh transmissions come in sizes to suit all types of duty.

**ENGINES WITH PROVED EARNING POWER.** Famous sixes that out-sell all others because they're best at brightening cost records . . . big V8's that lead the industry for short-stroke design and hard-working durability! Chevy for '61 offers a *long* line of power plants to meet the special needs of every weight class. They're money-making specialists, designed to hammer down high costs in tough truck duty.

The truth is, we could fill every page in this magazine with reasons why Chevrolet trucks have never been better than they are for '61, but there's no need for that. Not when your Chevrolet dealer can boil it all down for you so quickly and pleasantly. See him soon and start saving soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Member of the ATA Foundation, Inc., American Trucking Industry

## 1961 CHEVROLET STURDI-BILT TRUCKS



CHEVROLET



# *All-wheel drive and*



## *the TS-14 "Euc" is in a class by itself!*

No matter what your scraper requirements may be—small yardage work for land conservation, secondary roads etc. to the biggest projects—the Euclid TS-14 can cut your earthmoving costs.

Here's performance and overall work-ability in a medium size scraper—14 yds. struck and 20 yds. heaped—that's way ahead of any scraper of comparable capacity. With two engines (296 total h.p.) and separate Torqmatic Drives for each axle, the TS-14 gets a heaped load in a hurry... gets out of the borrow pit or cut fast... and highballs on the haul road. It can self-load in practically any

material, and with a pusher it's a big producer on the toughest jobs.

If you want a one-man earthmoving spread that can work more days per year... that handles a wider range of jobs and isn't stalled by steep grades and adverse conditions... ask your dealer for the new catalog No. 555 or better yet, have him show you one in operation.

**EUCLID Division of General Motors**  
Cleveland 17, Ohio

*Plants at Cleveland and Hudson, Ohio  
and Lanarkshire, Scotland*

# *greater versatility...*



- **Twin-Power ... a Euclid exclusive**
- **Hydraulic scraper operation**
- **Proven planetary drives**
- **One-man earthmoving spread**
- **Greater service accessibility**



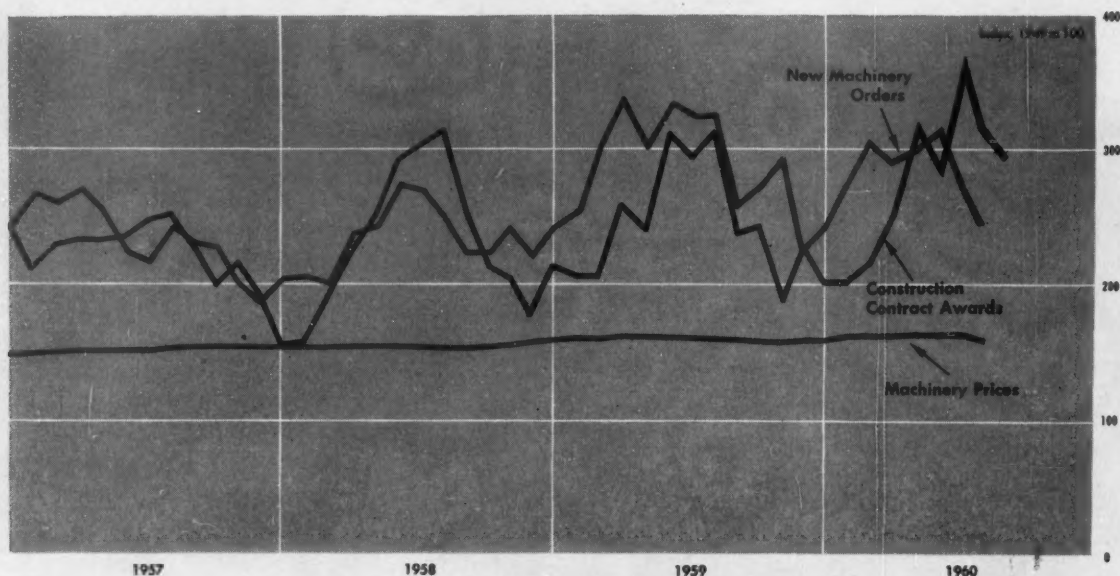
*All-wheel drive "Twins"  
give you a longer, more  
profitable work season*



## **EUCLID EQUIPMENT**

FOR MOVING EARTH, ROCK, COAL AND ORE

# Trends in the Machinery Market...



## Price Index

	AUG. 1960	MONTH AGO	YEAR AGO	% CHANGE 1959-1960
All Types of Equipment .....	176.8	175.5	172.2	+ 2.7
<b>Cranes, Draglines, Shovels</b> .....	<b>173.4</b>	<b>173.4</b>	<b>169.2</b>	<b>+ 2.5</b>
Shovel, 1/2 cu yd .....	167.9	167.9	163.3	+ 2.8
Shovel, 3/4 cu yd .....	175.4	175.4	172.5	+ 1.7
Shovel, 1-1/2 cu yd .....	188.2	188.2	181.9	+ 3.5
Shovel, 2-2 1/2 cu yd .....	170.3	170.3	162.1	+ 5.1
Shovel, 3-3 1/2 cu yd .....	167.8	167.8	167.8	0
Shovel, 6 cu yd .....	197.9	197.9	195.0	+ 1.5
Crane, truck mounted .....	168.2	168.2	166.2	+ 1.2
Crane, tractor mounted .....	135.1	135.1	135.1	0
Bucket, clam shell .....	162.9	162.9	157.5	+ 3.4
Bucket, dragline .....	169.3	169.3	169.3	0
<b>Scrapers and Graders</b> .....	<b>166.6</b>	<b>166.6</b>	<b>165.7</b>	<b>+ 0.5</b>
Scraper, 4 Wheel, 8-10.5 cu yd .....	155.0	155.0	155.0	0
Scraper, 4 Wheel, 12-15 cu yd .....	156.8	156.8	156.8	0
Scraper, 2 Wheel, 15-19.5 cu yd (a) .....	126.2	126.2	123.7	+ 2.0
Grader, heavy duty .....	174.1	174.0	172.6	+ 0.9
Grader, light & medium .....	170.9	171.1	171.1	0.1
<b>Tractors (non-farm, incl industrial)</b> .....	<b>193.8</b>	<b>192.0</b>	<b>187.8</b>	<b>+ 3.2</b>
Wheel type, off-highway (a) .....	129.2	129.2	128.2	+ 0.8
Crawler type, 50-74 dhp .....	203.5	200.4	191.9	+ 6.0
75-99 dhp .....	204.3	201.2	196.4	+ 4.0
100-154 dhp .....	198.2	197.3	191.3	+ 3.6
155-200 dhp .....	203.3	203.3	201.3	+ 1.0
<b>Machinery, Tractor Mounted</b> .....	<b>176.2</b>	<b>169.5</b>	<b>168.6</b>	<b>+ 4.5</b>
Dozer, cable controlled .....	164.9	154.4	154.4	+ 6.8
Dozer, hydraulic controlled .....	201.9	186.6	186.6	+ 8.2
Cable power control unit .....	152.9	152.9	151.4	+ 0.9
Loader, tractor shovel .....	163.2	163.2	161.5	+ 1.0
<b>Specialized Machinery</b> .....	<b>198.7</b>	<b>198.7</b>	<b>197.0</b>	<b>+ 1.1</b>
Ditcher .....	153.8	153.8	156.6	- 1.8
Roller, tandem .....	226.4	226.4	220.2	+ 2.8
Roller, 3 wheel .....	178.7	178.7	174.9	+ 2.2
Ripper and rotoir .....	156.6	156.6	150.5	+ 4.0
Dewatering pump, 10 M gph .....	111.5	111.5	110.0	+ 1.3
Dewatering pump, 90 M gph .....	151.5	151.5	150.5	+ 0.6
<b>Portable Air Compressors</b> .....	<b>167.5</b>	<b>167.5</b>	<b>167.5</b>	<b>0</b>
<b>Contractor's Air Tools</b> .....	<b>181.6</b>	<b>181.6</b>	<b>181.6</b>	<b>0</b>
<b>Mixers, Pavers, Spreaders</b> .....	<b>161.8</b>	<b>161.8</b>	<b>157.1</b>	<b>+ 3.0</b>
Mixer, portable, 11 cu ft .....	166.8	166.8	165.9	+ 1.0
Mixer, portable, 16 cu ft .....	172.7	172.7	172.2	+ 0.3
Mixer, truck, 6 cu yd .....	135.1	135.1	132.4	+ 2.0
Mixer, paving, 34 cu ft .....	196.7	196.7	193.5	+ 1.6
Concrete finisher & spreader .....	201.9	201.9	196.7	+ 2.6
Bituminous distributor .....	126.2	126.2	122.3	+ 3.1
Bituminous spreader .....	179.4	179.4	170.2	+ 5.4
Bituminous paver .....	165.6	165.6	159.3	+ 4.0
<b>Off-Highway Trucks, Wagons (b)</b> .....	<b>102.5</b>	<b>102.5</b>	<b>101.1</b>	<b>+ 1.3</b>
Contractors off-highway truck (b) ..	102.0	102.0	101.1	+ 0.9
Trailer dump wagon (b) ..	106.7	106.7	101.4	+ 5.2

• (a) January, 1955 = 100 • (b) January, 1958 = 100  
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

## Equipment Orders Down Again, Though Contract Awards Boom

Equipment orders fell in July for the second consecutive month. While heavy construction contractors' new business was setting a new July record, manufacturers of construction and mining machines booked 11% less order volume than in June and 23% less than May's peak.

The new orders index for July was 245, based on the average monthly volume in 1949. This was the poorest for July since '57, according to the McGraw-Hill Economics Department, which computes the index from reports by cooperating companies who primarily produce construction and mining equipment (orders for their other products are included).

Thus the equipment orders trend pulls sharply under the construction contract trend (see chart). This contrasts with late '58 through early '60 when orders climbed above the contract trend.

This reversal of form may reflect some "overbuying" relative to new construction business in 1959, due to these factors: Buying in '59 replacement deferred during the 1957-'58 recession in contractors' new business and the double-edged effect of the '59 steel strike—fears of disruption in equipment deliveries and the actual slowdown of contracting schedules when steel supplies ran out.

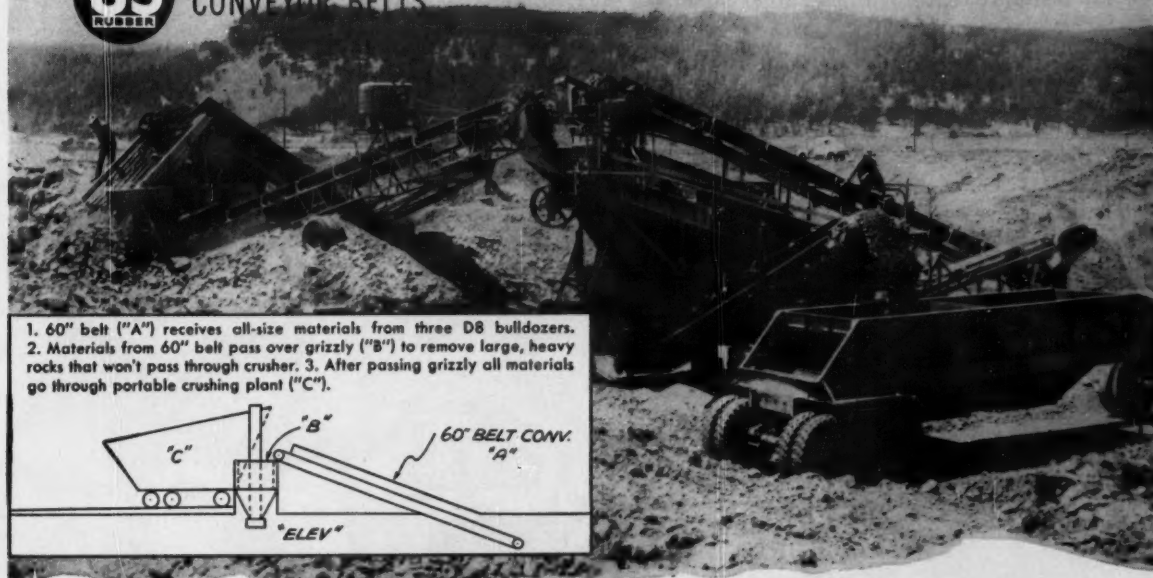
But judging by the strength of the current boom in contractors' new business, the new orders index will probably be obliged to return to a closer relationship with the contract trend before long.

Meanwhile, the contract awards index sets a new August high of 296, based on 1949=100. It's the third consecutive contract record for the respective month—the June-August pace averaging the highest ever recorded by Construction Methods in any three-month period.

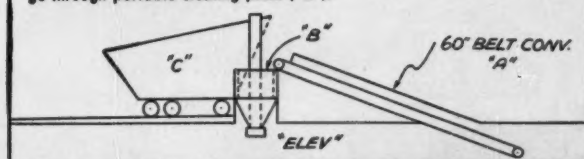




CONVEYOR BELTS



1. 60" belt ("A") receives all-size materials from three D8 bulldozers. 2. Materials from 60" belt pass over grizzly ("B") to remove large, heavy rocks that won't pass through crusher. 3. After passing grizzly all materials go through portable crushing plant ("C").



## Conveyor equipped with U.S. Matchless Belt increased production from 175 tons to 300 tons per hour

Such records as this have made U. S. Rubber the world's foremost belting authority.

In this instance the "U.S." Belt helped increase production at the Carlson-Lien Company (Piedmont, S.D.), a supply firm currently producing road-building crushed rock and delivering it to highway projects. The belt is 60" wide, 35 feet from center to center (78 feet overall). "Our intention," says Bruce Lien, company secretary-treasurer, "is to replace all belts with U. S. Rubber Belts."

In this operation, bulldozers push the rocks to be processed into the loading point. The conveyor belt then carries this material to the grizzly. The belt was designed to withstand direct loading by bulldozers. The impact of the large rocks falling directly on the belt does not damage the conveyor system. This permits the grizzly to be placed at the discharge end of the conveyor instead of at the feed point as in conventional installations.

The superiority of this belt not only helped speed up and increase production, but also eliminated the need for three or four men to laboriously remove large rocks that would damage a belt of inferior quality. The "U.S." Belt proved so efficient in tons moved per hour that another bulldozer was added to keep the loading pit stocked with raw materials. "The belt will pay for itself on this one job. We recommend it to anyone," says Bruce Lien.

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.



Close-up of 60" U.S. Matchless® Belt carrying rocks from raw material pit up incline to crusher.

This installation was handled by "U.S." Distributor W. S. Neft, Minneapolis



Mechanical Goods Division

# United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Company, Ltd.

OCTOBER, 1960

Circle 41 on Reader Service Card

41

**INTERNATIONAL R-LINE** six-wheelers (right) save time, reduce bog-down and slow-down problems by providing maximum flotation and traction. Six-cylinder engines up to 501 cu. in. displacement are available with gasoline or LPG power. Gear reduction of over 100-to-1 multiplies engine torque to tandem axle to assure smooth, powerful performance. GVW ratings up to 53,000 lbs. ➡

**INTERNATIONAL V-LINE** dump trucks (below) are ideal for exacting operations. Powerful gasoline V-8 engines with up to 257 hp. supply the power needed to come out of rough areas with king-size loads plus a high average road speed to cut trip time. Also available with LPG and diesel power supplying 695 lb.-ft. of torque. Extra heavy-duty frames, brakes and front end can really stand long term punishment. GCW ratings exceeding 100,000 lbs.



***INTERNATIONAL is always ready  
to serve and solve  
your transportation needs!***

INTERNATIONAL six-wheel dump trucks have "take-any-terrain" ruggedness and maneuver easily in "tight" working conditions—just two reasons why they do their job right and on time. They're built to get in *and* out. Whatever INTERNATIONAL dump truck model you select, you can be assured of maximum power-performance every day of the year. See your INTERNATIONAL Dealer or Branch today for full details.



When schedule demands pinch your operation, and you need a dump truck right away — six-wheeler or single axle — call on your INTERNATIONAL Truck Dealer or Branch. Within 24 hours, dump truck models in popular sizes and specifications are ready for shipment from the INTERNATIONAL Truck Sales Processing center. This "pool" has been made famous by getting complete units in the field when you want them. Through anticipation and knowledge of your emergency needs and equipment demands, INTERNATIONAL is prepared to keep your job on schedule.

Model Series	RF-192	BCF-182	B-184	B-182	B-164
Gross Vehicle Rating	43,000	35,000	24,000	21,000	19,000
Body	8-10 Yd.	8 Yd.	4 Yd.	4 Yd.	4 Yd.
Wheelbase	157 in.	149 in.	141 in.	141 in.	129 in.
Engine	450 cu. in.	345 cu. in.	345 cu. in.	345 cu. in.	304 cu. in.
Transmission	5-speed Direct, 3-speed Auxiliary	5-speed Direct, 3-speed Auxiliary	5-speed Direct	5-speed Direct	4-speed Synchro-mesh
Rear Axle and Capacity	34,000 single- reduction tandem	28,000 single- reduction tandem	18,500 2-speed	16,000 2-speed	15,000 2-speed
Tires	9.00 x 20 10 ply	9.00 x 20 10 ply	10.00 x 20 12 ply	9.00 x 20 10 ply	8.25 x 20 10 ply
Frame Reinforcements	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"
Heavy Duty Springs			Front & Rear	Front & Rear	Front & Rear

# INTERNATIONAL® TRUCKS

WORLD'S MOST  
COMPLETE LINE



INTERNATIONAL HARVESTER CO., CHICAGO • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

OCTOBER, 1960



# Construction Business ...

## Equipment Shipments:

## Some Up; Some Down

Equipment manufacturers' shipments in the first quarter indicate shifts in contractors' equipment buying early this year, compared to the first three months of 1959.

Rising shipments indicated increased buying of tractor shovels, off-highway trucks and motor graders. Both dollar value and number of machines shipped in the first quarter exceeded the year-ago totals, according to the US Bureau of Census figures based on reports from manufacturers.

By contrast, dollar value and number of machines shipped fell off in the first quarter for off-highway trailers and wagons and for rollers and compactors.

Higher dollar volume but fewer machines shipped indicate that contractors' orders were up for large size crawler tractors. However, a trend toward smaller capacity rigs seems apparent from lower dollar value but increased numbers of scrapers, ditchers and trenchers moving out of manufacturers' plants.

Because the Bureau of Census this year made another major change (mostly on the improvement side) in its quarterly "M35D" report on shipments of selected types of construction equipment, more detailed comparisons of '60 vs '59 or previous years can't be made. But the figures are interesting because they indicate what contractors are buying this year (see tables).

The new report also shows how exports to contractors, other industry, and governments outside the US took a large share of total US construction equipment output in the first quarter.

For example, 33% of the crawler tractors shipped were for export. In the full year 1956, the last year that exports were reported (not reported quarterly since 1954), exports took 31% of the dollar value — numbers weren't reported. In 1955, exports accounted for 34.5% of crawler tractor shipments.

Exports of rubber-tired off-highway tractors took 33.4% of

the dollar value, 31.4% of the number shipped in the first quarter of '60. In 1955 and 1956, exports represented 20.5% and 31.5%, respectively, of total value shipped. In the 300-maximum-

engine-hp and up class, exports early this year took a whopping 69% of rubber-tired tractors shipped.

A high percentage of tractor shovel shipments went out of the country early this year. Exports accounted for 31% of the number of crawler types shipped. And for rubber-tired models, exports took 28% of the number and 26.5% of the total value shipped.

*continued on page 47*

## Construction Equipment Shipments— First Quarter 1959 and 1960

U. S. Bureau of Census data based on reports  
by 221 manufacturers. Exports included.

	Dollar Value (Millions)				Number		
	1960	1959	% Chg		1960	1959	% Chg
Tractors	\$103.6	92.4	+12		8,423	8,445	-0.3
Tractor-Mounted Machinery	30.4	24.9	+22		na	na	
Tractor Shovels	53.0	49.6	+7		5,478	5,102	+7
Scrapers	8.6	11.4	-25		861	812	+6
Ditchers, Trenchers	3.0	3.1	-3		880	474	+86
Off-Highway Trucks	15.4	13.8	+12		862	558	+19
Off-Highway Trailers, Wagons	0.7	1.1	-36		57	80	-29
Motor Graders	24.3	22.7	+7		1,890	1,772	+7
Rollers	5.7	7.7	-22		1,402	2,012	-29
Compactors	0.3				32		
Mixing & Paving Machinery	20.1	21.8	-8		1,538	na	

Type	Value (millions)	Number	Type	Value (millions)	Number
Tractors, total	\$103.6	8,423	Ditchers, Trenchers	3.0	880
Crawler, total	87.3	7,630	Ladder, rubber tired	1.0	714
20-59 net eng. hp	na	2,829	crawler	0.9	88
60-89 net eng. hp	na	1,049	Wheel type	1.1	78
90-129 net eng. hp	na	1,049	Off-Highway Trucks, total	15.4	862
130 net eng. hp & up	na	2,703	Rear dump	8.6	237
Wheel, total	16.3	793	Under 20 ton cap	1.6	102
Under 200 max. hp	1.4	115	20 ton cap. & up	7.0	135
200-299 max. hp	6.7	346	Other truck-tractor types	6.8	425
300 max hp & up	8.2	332	Under 30 ton	3.0	198
By number of wheels—			30 ton & up	3.8	227
2-Wheel	11.5	555	Off-Highway Trailers, Wagons	0.7	57
4-Wheel	4.7	238	Motor graders, total	24.3	1,890
Tractor-Mounted Machinery	30.4		Under 75 brake hp	1.0	188
Dozers, 6-ft & over	9.9	5,452	75-114 brake hp	2.5	211
Hydraulic, total	6.5	4,086	115 brake hp & up	20.8	1,491
For crawler tractor	6.3	3,966	Rollers, total	5.7	1,402
For wheel tractor	0.2	120	Self-propelled	4.9	1,100
Cable operated	3.4	1,366	3-Wheel	0.9	85
Front-end loaders	4.7	5,892	Tandem 2 and 3 axle	2.0	563
Backhoes	7.3	3,486	Under 3 tons	0.3	255
Sidebooms	0.2	45	3 tons to 4½ tons	0.6	135
Power control units	6.4	5,470	Over 4½ tons-7½ ton	0.4	67
Rippers, rooters	1.9	5,296	Over 7½ tons	0.7	106
Cranes	0.1	13	Rubber tired	1.6	246
Tractor Shovels, total	53.0	5,478	Other	0.4	206
Crawler, total	29.8	3,687	Pull type	0.8	302
20-59 net eng. hp	na	2,484	Rubber tired	0.2	116
60-89 net eng. hp	na	814	Other	0.6	186
90-129 net eng. hp	na	409	Compactors	0.3	32
Wheel, total	23.2	1,791	Mixing & Paving Machinery	20.1	1,538
1 cy to under 2 cy	8.2	899	Crushing, screening, and		
2 cy to under 2½ cy	8.0	550	wash. plants, portable	7.3	279
2½ cy and over	7.0	342	Concrete batching plants	2.7	191
Scrapers, 2- & 4-wheel,			Bituminous plants, total	8.9	843
total	8.6	861	Central mixing	7.5	90
Under 7 cy	0.1	160	Under 2M lb batch	4.2	47
7 cy to under 12 cy	1.2	187	2M lb to 3.5M lb	0.8	17
12 cy to under 16 cy	3.2	288	4M lb to 6M lb	2.6	26
16 cy and up	4.1	226	Other	1.4	753
			Bituminous distributors	1.2	225



HAROLD PATE

**WITH POWER SHIFT TRANSMISSION...**

**"We proved the 977H Traxcavator  
doubles our production"**



Strunk Bros. of Tiskilwa, Ill., put its new Caterpillar 977H to the test.

"We put the Series H machine against the earlier 977... had them side by side excavating and loading 10-yard trucks," Superintendent Harold Pate reports. "Both machines had expert operators. The 977H loaded out five trucks in the same time the older machine got 2 or 2½ trucks. We proved the new 977H Traxcavator doubles our production."

Operator Wilbur Crank, who loaded 11 to 12 cu. yd. of clay and loam in the trucks in 60 seconds with the new unit, explains why.

"It's easier to operate. It's got more power. It's faster and handles well in mud. But most important, it's got that power shift transmission. That's the biggest part of the faster cycles. I can shift down instantly—and I mean *instantly*—to the speed I need. A flick of the wrist and I'm in second for moving. Another flick and I'm in reverse."

The 977H is a machine with more of everything. Horsepower of its turbocharged engine is up 50%—to 150 HP at the flywheel. Hydraulic lifting power is up 41% because of Caterpillar's *live action* hydraulics.

That means faster lifting speed and greater lifting capacity without robbing power from the tracks.

Bucket capacity is up 11%—to 2½ cu. yd.—and there's a stronger linkage to handle the heavier loads. And there's a larger, stronger, lifetime lubricated undercarriage to stand up under the roughest conditions. It never needs servicing until rebuilding.

You may be missing a lot—in profits and production—if you aren't using one of the new Series H Traxcavators. See for yourself. Your Caterpillar Dealer will demonstrate one of the new machines side by side with the machine you are now using on your present job. And watch the difference!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**CATERPILLAR**

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ARE MAKING OTHER  
LOADERS OBSOLETE**



## First man on the job— after your Travelers agent

Call your Travelers man while your new construction is still a castle in the air. The Travelers umbrella of protection offers more than complete insurance coverage. It includes the services of experts who can help you secure your job against costly accidents and delays.

**Bonds, fast and right:** Your Travelers man is an expert on requirements—federal, state and local—gets bonds to responsible contractors *fast*.

**Workmen's Compensation and Public Liability** includes the services of Travelers safety experts who help you rout out hidden hazards, keep accidents in check. Travelers-insured jobs show consistently low accident figures.

**Builders' Risk Insurance** and Contractors' Equipment Floaters are backed by a claims organization that can give you prompt attention anywhere in the United States.

For *complete* protection and expert service that help you fulfill your commitments on time—with increased safety—call your Travelers Agent when you *start* to plan. His number is in the Yellow Pages of your phone book.

**THE TRAVELERS**  
Insurance Companies HARTFORD 15, CONN.



# CONSTRUCTION BUSINESS...continued

## Construction Equipment Shipments 1958-1959 — Selected Types

U. S. Bureau of Census data based on reports by 249 manufacturers. Exports included.

Type	1959 Dollars Millions	1958 Dollars Millions	Chg. %	1959 Number of Machines	1958 Number of Machines	Chg. %
<b>Tractors, total</b>	<b>\$763.9</b>	<b>\$683.5</b>	<b>+ 17</b>	—	—	—
Crawler, total	582.7	482.7	+ 21	—	—	—
Under 50 dhp	43.2	30.9	+ 40	15,423	10,991	+ 40
50-74 dhp	30.3	29.5	+ 3	4,688	4,806	+ 2
75-99 dhp	47.0	34.1	+ 38	4,305	3,379	+ 27
100 dhp & up	202.5	172.0	+ 18	9,696	9,274	+ 5
Attachments	17.0	16.5	+ 3	—	—	—
Parts	242.7	199.6	+ 22	—	—	—
Wheel, total	121.2	120.8	+ 0.3	—	—	—
Under 170 brake hp	8.4	8.5	— 1	639	695	— 8
170-249 brake hp	20.1	22.6	— 11	1,065	1,254	— 15
250 brake hp & up	63.4	54.3	+ 17	2,361	2,139	+ 10
By number of wheels						
2-wheel	63.7	57.8	+ 10	2,960	2,824	+ 5
4-wheel	28.3	27.7	+ 2	1,105	1,264	— 13
Attachments	3.5	2.6	+ 35	—	—	—
Parts	25.8	32.8	— 21	—	—	—
<b>Tractor-Mounted Machinery</b>	<b>119.0</b>	<b>86.5</b>	<b>+ 38</b>	—	—	—
Dozers, 6-ft & over	41.7	31.5	+ 32	23,574	18,614	+ 27
Hydraulic, total	25.0	16.9	+ 48	16,917	12,317	+ 37
For crawler tractor	23.9	16.3	+ 47	16,289	11,766	+ 38
For wheel tractor	1.1	0.6	+ 83	628	551	+ 14
Cable operated	16.7	14.6	+ 14	6,857	6,297	+ 6
Front-end loaders(a)	17.0	9.6	+ 77	21,354	13,657	+ 56
Backhoes	28.3	18.9	+ 50	14,711	10,031	+ 47
Sidebooms, pipehandlers	1.6	2.5	— 36	302	450	— 33
Power control units	22.9	18.2	+ 26	19,746	17,173	+ 15
Rippers, rooters(b)	7.5	5.9	+ 27	4,811	4,113	+ 17
<b>Tractor Shovels, total</b>	<b>228.9</b>	<b>157.9</b>	<b>+ 45</b>	<b>19,744</b>	<b>14,388</b>	<b>+ 37</b>
Crawler, total	122.3	87.9	+ 39	10,488	7,741	+ 35
Under 1½ cy	18.5	17.1	+ 8	3,131	2,193	+ 43
1½ to under 2¼ cy	59.8	47.3	+ 26	5,106	4,239	+ 20
2¼ cy and over	44.0	23.5	+ 87	2,251	1,309	+ 72
Wheel, total	106.6	70.0	+ 52	9,256	6,657	+ 39
Under 1 cy	9.7	6.3	+ 54	1,908	1,388	+ 37
1 to under 1½ cy	16.2	21.9	— 26	2,114	2,416	— 12
1½ cy and over	80.7	41.8	+ 93	5,234	2,853	+ 83
<b>Scrapers, total(c)</b>	<b>55.1</b>	<b>46.2</b>	<b>+ 19</b>	<b>4,167</b>	<b>3,970</b>	<b>+ 5</b>
Under 7 cy, total	0.7	NA	—	769	NA	—
2-wheel	0.3	NA	—	470	NA	—
4-wheel	0.4	NA	—	299	NA	—
7 to under 12 cy	9.1	7.2	+ 26	1,397	1,182	+ 18
2-wheel	7.6	5.2	+ 46	1,136	792	+ 43
4-wheel	1.5	2.0	— 25	261	390	— 33
12 to under 18 cy(d)	10.5	12.0	— 12	947	1,206	— 21
18 cy and over(d)	35.5	27.0	+ 31	1,823	1,582	+ 15
<b>Ditchers, Trenchers</b>	<b>13.9</b>	<b>8.2</b>	<b>+ 70</b>	<b>2,656</b>	<b>1,496</b>	<b>+ 78</b>
Ladder, rubber tired	2.3	1.7	+ 35	1,693	905	+ 87
Crawler	4.1	2.4	+ 71	441	305	+ 45
Wheel type	7.5	4.1	+ 83	822	286	+ 83
<b>Power Cranes &amp; Shovels</b>	<b>241.8</b>	<b>216.5</b>	<b>+ 12</b>	<b>7,649</b>	<b>6,625</b>	<b>+ 15</b>
Crawler, total	166.6	146.4	+ 14	4,743	4,048	+ 17
Under ½ cy	3.4	2.1	+ 62	348	275	+ 27
½ cy	15.8	9.2	+ 70	844	592	+ 43
¾ cy	39.5	30.5	+ 30	1,553	1,406	+ 10
1 to 1¼ cy	6.0	25.0	— 76	850	778	+ 9
1¼ to 1¾ cy	19.3	16.0	+ 21	377	354	+ 6
2 cy	8.4	3.5	+ 140	159	67	+ 137
2½ cy	20.0	18.9	+ 6	267	269	— 1
Over 2½ cy	54.4	41.2	+ 32	345	307	+ 12
Rubber tired, total	64.3	59.3	+ 8	2,890	2,555	+ 13
10 tons or less(e)	13.3	10.2	+ 30	1,293	1,224	+ 6
11-15 tons	9.5	7.3	+ 30	624	313	+ 99
16-20 tons	11.0	18.6	— 41	369	516	— 28
21-25 tons	7.3	7.1	+ 3	201	200	+ 0.5
26-30 tons	4.3	3.5	+ 23	91	78	+ 17
31-35 tons	9.3	8.2	+ 13	169	154	+ 10
36-45 tons	4.0	2.9	+ 38	72	82	— 38
Over 45 tons	5.0	1.5	+ 273	71	18	+ 294
Walking cranes, drag lines	10.9	10.8	+ 1	16	22	— 27
Locomotive cranes	2.9	2.7	+ 7	40	38	+ 11
<b>Off-Hwy. Trucks</b>	<b>85.6</b>	<b>39.1</b>	<b>+ 42</b>	<b>2,387</b>	<b>1,706</b>	<b>+ 40</b>
<b>Off-Hwy. Trailers &amp; Wagons</b>	<b>4.6</b>	<b>5.2</b>	<b>— 12</b>	<b>357</b>	<b>424</b>	<b>— 16</b>
<b>Motor Graders, total</b>	<b>95.1</b>	<b>82.0</b>	<b>+ 17</b>	<b>7,321</b>	<b>6,852</b>	<b>+ 19</b>
Under 75 brake hp	5.1	5.4	— 6	1,018	1,049	— 3
75-114 brake hp	11.7	10.8	+ 8	986	944	+ 4
115 brake hp & up	79.0	65.8	+ 20	5,317	4,859	+ 14
<b>Railers, Self-Propelled(f)</b>	<b>12.2</b>	<b>12.2</b>	<b>0</b>	<b>2,899</b>	<b>2,766</b>	<b>+ 2</b>
3-Wheel	3.4	3.6	— 6	628	495	+ 27
Portable	1.4	0.8	+ 75	380	443	— 14
Tandem 2 & 3 axle	7.4	7.8	— 5	1,691	1,828	— 7
Other(g)	7.6	20.0	+ 14	3,138	6,533	+ 21
<b>Compactors, total</b>	<b>15.2</b>	<b>NA</b>	<b>—</b>	<b>4,766</b>	<b>NA</b>	<b>—</b>
Self-propelled	11.4	NA	—	3,711	NA	—
Pull type	3.8	NA	—	1,055	NA	—
<b>Mixing &amp; Paving Machinery</b>						
Crushing, screening, wash. plants, portable	32.3	29.1	+ 11	1,123	1,201	— 6
Conc. mixers, 3½ cy up—	34.4	25.6	+ 34	9,343	7,426	+ 26
Truck or agitator	8.8	7.0	+ 26	11,870	9,952	+ 19
Other	17.0	15.0	+ 13	1,236	1,086	+ 14
Conc. batchg. plants						
Bituminous plants	28.2	23.5	+ 20	293	278	+ 5
Central mix, batch	7.3	12.3	— 41	187	153	+ 22
Central mix, cont.	4.8	4.3	+ 12	3,247	3,305	— 2
Other(h)	3.3	3.4	— 3	753	785	— 4

• a ¾ cy & up; excludes shipments to makers of complete tractor shovels. • b Heavy rear-mounted. • c Excludes Under 7 cy. • d 2-Wheel and 4-Wheel. • e Maximum crane working load. • f Excludes "other". • g Tamping, sheepfoot, compaction, pneumatic tire, tampers and trench. • h Portable mixers, heating kettles, heaters, circulators and other.

Contracts Awarded begins on page 49



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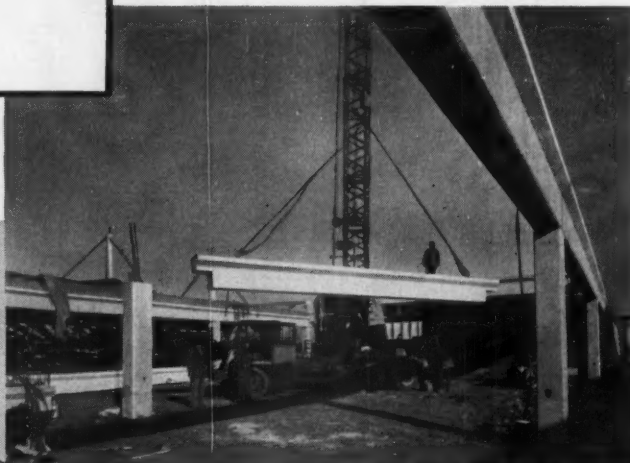
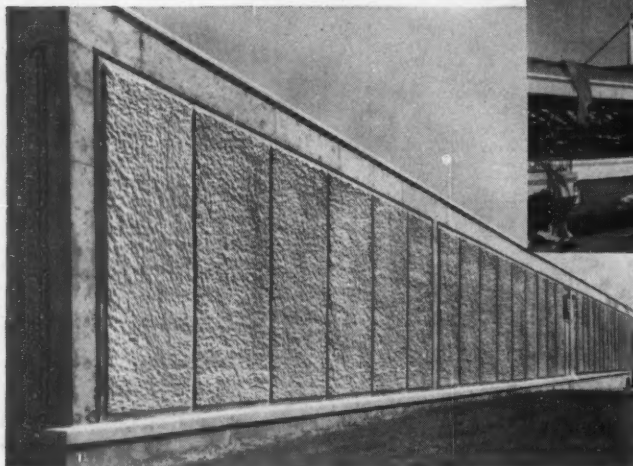
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HARTFORD 15, CONN.

# Prestressed members, textured tilt-up walls FOR NEW ALL-CONCRETE CANDY FACTORY

Owner: Pearson Candy Company, St. Paul, Minn.  
 Architect: Thorshov & Cerny, Inc., Minneapolis, Minn.  
 Contractor: C. O. Field Co., Minneapolis, Minn.  
 Prestressed Units: Prestressed Concrete, Inc., Roseville, Minn.  
 Ready Mix Concrete For Tilt-up Slabs: Guaranteed Concrete Company, St. Paul, Minn.  
 Light Weight Concrete Decking: Western Mineral Products Co., Minneapolis, Minn.



(Above) The 160' x 390' building is framed on 30' x 30' and 39' x 30' column centers. Beams are prestressed, columns precast. The floor area at the two story kitchen supports live load of 225 lbs. per sq. ft. without reduction in column spacing.

(Left) Most striking outward feature of the new Pearson factory is the tilt-up concrete wall. The interesting texture was achieved by casting the slabs on beds of gravel which had first been covered with plastic film. A total of 47 slabs 12' high and of lengths from 5' to 39' was required.

• Prestressed beams, channels, and precast columns provide the structural strength and large open floor areas needed for the Pearson Candy Company operation at St. Paul, Minn. Lightweight concrete roof decking and interesting tilt-up walls provide insulation and architectural effect, and complete the fireproof and low maintenance qualities of the building from roof to foundation.

Lehigh Cements were used throughout. Lehigh Portland for tilt-up walls. Lehigh Early Strength for precast and prestressed members, and for the roof decking. Lehigh Portland Cement Company, Allentown, Pa.

## LEHIGH CEMENTS



504 prestressed channel slabs, each spanning 30', were used in the roof. Over these, lightweight concrete decking was used to insulate and reduce dead load. The simplicity of design seen in this picture indicates the ease with which an efficient building can be erected, using modern concrete construction methods.

## SOME BIG CONTRACT AWARDS OF THE MONTH

**S. J. Groves & Sons Co.**, Minneapolis, Minn. Construct a concrete gravity type dam on the Roanoke River near Leesville, Virginia. Appalachian Power Co., 40 Franklin Rd., Roanoke, Va. \$33,-500,000.

**John McShain**, Arlington, Va. Erect an office building in New York City. General Service Admin. 7th and D Sts. N.W., Washington, D.C. \$13,192,000.

**Barton Marlow Co.**, Detroit, Mich. Construct a water filtration plant in Detroit, Mich. Wayne County Road Commission, Detroit. \$17,-607,000.

**Rusciano Const. Corp.** and **Del Baslo Const. Corp.** both of Pelham, N. Y. Construct 2.1 mi of concrete pavement including 4.8 mi of access roads and bridge structures for the Clove Lakes Expressway, in New York City. State Dept. of Public Roads, State Office Building, Albany. \$12,-696,072.

**Gull Contracting Co., Inc.**, Flushing, N.Y. Construct 8.5 mi of reinforced concrete slab roadway including overpass structures for the Bruckner Blvd. Expressway in The Bronx, New York City. State Dept of Public Works. \$10,-509,380.

**Manhattan Construction Co. of Texas**, Houston. Construct a hospital building in Houston. City Hall, Houston. \$9,295,800.

**Aloha Construction Co.**, Los Angeles, Calif. Construct 500 Capehart housing units at the Naval Auxiliary Air Station in Lemoore, Calif. Public Works Office, 12th Naval District, San Bruno, Calif. \$8,110,415.

**Johnson, Drake & Piper, Inc.**, Oakland, Calif. Erect 20 buildings for a conservation center near Susanville, Calif. State Dept. of Corrections, 1120 N St., Sacramento, Calif. \$8,140,000.

**Florida Builders, Inc.**, St. Petersburg, Fla. Construct Capehart housing units at Key West Naval Station and Naval Air Station. Public Works Office, 6th Naval Dist., U.S. Naval Base, Charleston, S.C. \$7,979,000.

continued on page 51

Busy contractors demand **Ramset**

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MUST BE QUICK  
AND TROUBLE-FREE

Securing perimeter plates to concrete slabs in split-seconds... this is another of the countless jobs Ramset powder-actuated fastening does where time means money. A trigger pull sets a rugged Red Tip fastener permanently... no muss, no fuss, and no tedious pre-drilling!

Ramset is a safe, proved system for driving exclusive austempered threaded studs and drive pins into concrete or steel - up to fifteen times faster than old-fashioned methods! Offering industry's widest selection of dependable fasteners, tools and powder charges, Ramset is your best buy for economical, fool-proof fastening. Call your Ramset dealer (under "Tools" in Yellow Pages) or write direct for money-saving literature and details.

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## How COMMERCIAL tunnel supports pierce Rockies

As far as water supply is concerned, Denver is on the eastern or wrong side of the Continental Divide. To quench the thirst of Denver's growing population (present water supply will be inadequate by 1970), a \$101-million project to tap the Blue River of the water-rich western slope is boring to completion in 1962. An all-important part of this project is the 23

mile long Harold D. Roberts Tunnel.

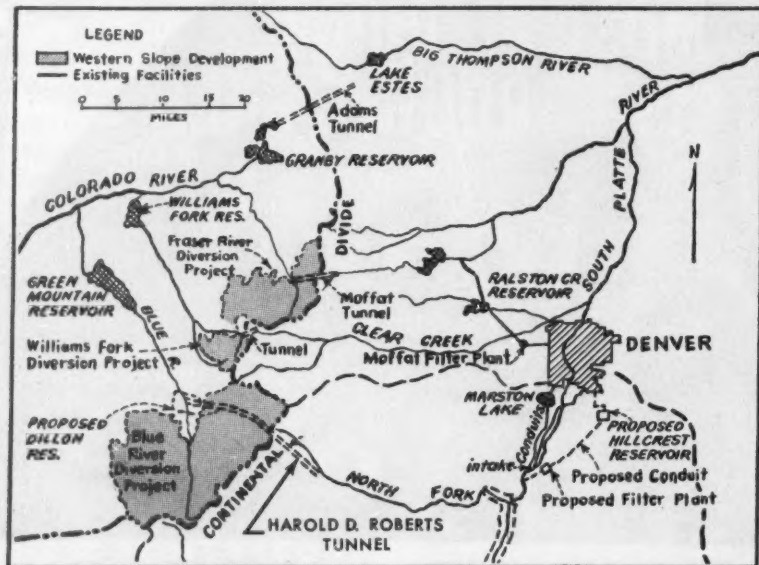
### Tough water problem in tunnel

The first 8½ miles of tunnel lie 600-800 ft. beneath the Snake River through rock faulted with frequent mud slips and high pressure water seams. Here high pressure water, 700 gpm, unchecked by 1500 psi grouting, was encountered and

slowed the advance until grout was pumped in four holes drilled 200 ft. into the heading. Bore of tunnel is horseshoe-shaped, 13 ft. 3 in. high and 12 ft. 6 in. wide at springline. In all, 17¼ miles of the tunnel required supports. Standard pattern of support in Pierre shale was COMMERCIAL 6" WF beams @ 20#/ft., spaced normal on 5 ft. centers. In badly faulted areas of pegmatite, schists, quartzites, gneiss, and coarse-grained, mineralized granite with mud slips and seams, support required spacing down to 2½ ft. centers and 8" WF beams @ 31#/ft.

### 32 years of COMMERCIAL supports

Entire Denver water supply complex, dating back to early pioneers, will be served by four tunnels: Moffat, Adams, Williams, and Roberts. COMMERCIAL steel supports served Moffat Tunnel (1928), Williams Tunnel (1937), Adams Tunnel (1940). For your next project, COMMERCIAL technical service, backed by over 30 years experience, is available to you for on-the-spot engineering help in tough situations. Write to the Commercial Shearing & Stamping Co., Dept. E-40, Youngstown 1, Ohio.



8000 square mile, man-made watershed serves Denver.

◀ Circle 49 on Reader Service Card

Circle 50 on Reader Service Card A

CONSTRUCTION METHODS

**COMMERCIAL**  
shearing & stamping

## CONTRACTS AWARDED . . .

*continued*

**Leon D. De Matteis & Sons, Inc.,** Erect a 16-story apartment building at 158th St. and Riverside Dr. in New York City. Klausner Associates, Inc., 152 W. 42nd St., New York 36. \$7,500,000.

**Robert E. McKee General Contractor, Inc.,** Santa Fe, N.M. Erect an administration building, dormitories, chapel, rectory and associated structures for the College of Mount St. Joseph, Ohio. \$7,145,000.

**Joseph P. Blitz, Inc.,** New York, N.Y. Construct the Andrew Jackson housing project in The Bronx, New York City. New York City Housing Authority, 299 Broadway, New York 7. \$6,959,000.

**Sherman Olson, Inc.,** Chicago, Ill. Remodel an office building in Chicago, Ill. Riverside Plaza Corp., 201 N. Wells St., Chicago 6. \$6,000,000.

**Krilich Builders,** Chicago, Ill. Erect a shopping center in Niles, Ill. Fisher & Shaffer, 874 N. Wabash St., Chicago 11. \$6,000,000.

**Gust K. Newberg Construction Co.,** Los Angeles, Calif. Construct a municipal convention and exhibit hall in Long Beach, Calif. City Hall, Long Beach. \$5,927,000.

**Chaney & James Construction Co.,** Dallas, Tex. Erect an aircraft fatigue test laboratory at the Wright-Patterson Air Force Base in Dayton, Ohio. Corps of Engineers, Box 59, Louisville, Ky. \$5,698,684.

**Mead & Mount Construction Co.,** Denver, Colo. Erect the superstructure for a 12-story office building in Denver. Public Service Co., 15th and Champa, Denver. \$5,500,000.

**R. E. Hazard Construction Co.,** and **W. L. Maxwell,** San Diego, Calif. Construct an eight-lane freeway including bridge structures and retaining walls in San Diego County. State Division of Highways, 120 S. Spring St., Los Angeles, Calif. \$5,219,340.

**Utah Construction & Mining Co.,** San Francisco, Calif. Construct



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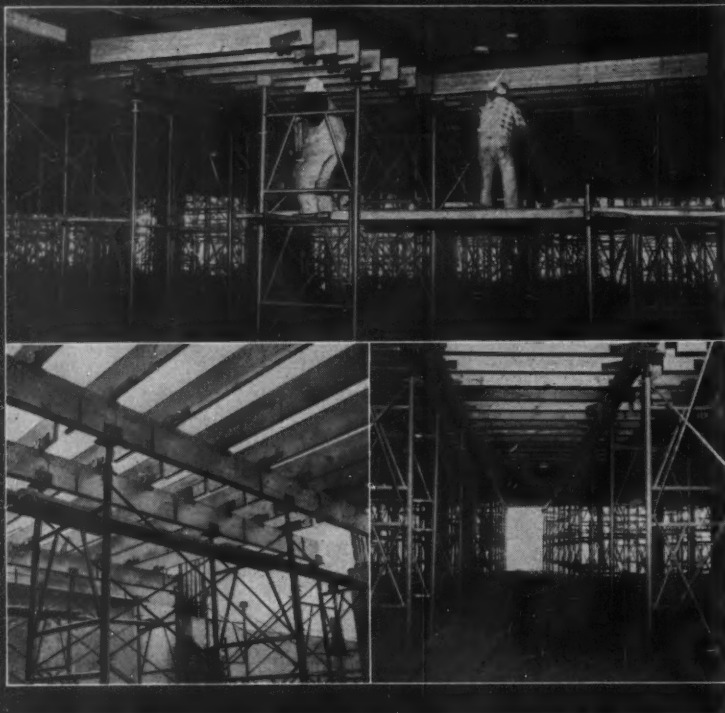
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# SAFWAY HEAVY DUTY FRAME SHORING

**carries loads on 50% fewer frames;  
cuts erection and dismantling time**

**CARRYING** up to 20,000 lbs. per frame, this equipment has twice the capacity of standard steel frame scaffolding. Thus any given load can be supported on *half as many frames*... with corresponding savings in assembly and dismantling time, transportation and storage. Also, heavier beams, slabs, roofs, etc., can be shored safely at virtually any height.

**LOAD DISTRIBUTION**—Frames carry 10,000 lbs. on each vertical leg—or 5,000 lbs. per leg plus 10,000 lbs. on high load-bearing top horizontal.

**FEW PARTS**—Only 3 frame sizes with screw jacks meet all job height requirements.

**PRECISION HEIGHT ADJUSTMENT**—With heavy duty screw jacks at the top, bottom or both.

**TOOL-LESS ASSEMBLY**—Frames mount on coupling pins; cross-braces mount on studs with wing nuts.

## SAFWAY

**SAFWAY STEEL PRODUCTS, INC.**  
6228 W. STATE ST., MILWAUKEE 13, WIS.

WRITE

FOR  
BULLETIN  
1110A



## CONTRACTS AWARDED... *continued*

the main passenger terminal at Oakland International Airport. Oakland Port Commission, Grove St. Pier, Oakland, Calif. \$5,200,-000.

**Nagle-Leck Inc.**, Minneapolis, Minn. Erect two office buildings with 266,000 sq ft of office space in Minneapolis. Pillsbury Co., 608 Second Ave. \$5,000,000.

**Michael Pontarelli, Inc.**, and **John C. Tully Co.**, Chicago, Ill. Construct 3.1 mi of storm sewer near the South Expressway in Chicago. Dept. of Public Works & Buildings, Centennial Building, Chicago. \$4,608,731.

**J. A. Jones Construction Co.**, Seattle, Wash. Excavate navigational channel for the Ice Harbor Lock and Dam near Pasco, Wash. Corps of Engineers, City-County Airport, Walla Walla, Wash. \$4,450,000.

**Walter Kidde Constructors, Inc.**, New York, N.Y. Erect a 14-story student activity center in Hoboken, N.J. Stevens Institute of Technology, 5th and Hudson Sts., Hoboken. \$4,000,000.

**J. C. Breyfogle Co.**, Trenton, N.J. Construct a shopping center and parking area in Trenton, N.J. Garfield Associates, 24 Commerce St., Newark. \$4,000,000.

**Jewel Builders and Honor Corp.**, Columbus, Ohio. Construct an apartment housing complex in Cincinnati, Ohio. Doxiadis Associates, 1757 K St., Washington, D.C. \$4,000,000.

**Cahill Construction Co.**, San Francisco, Calif. Erect a 23-story apartment building in San Francisco. Tishman Realty Co., 666 5th Ave., New York, N.Y. \$7,000,-000.

**J. L. Simmons & Co., Inc.**, Chicago, Ill. Construct a meat packing plant in Rochelle, Ill. Swift & Co., Chicago. \$5,000,000.

**Ralph Myers Contracting Corp.**, Pitcairn, Pa. Construct 9,898-ft of concrete pavement including six bridge structures. Highway Dept., 506 North Office Building, Harrisburg, Pa. \$4,859,034.



# YARDS AHEAD

## PRODUCTION

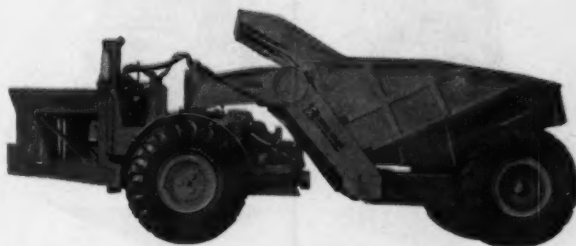
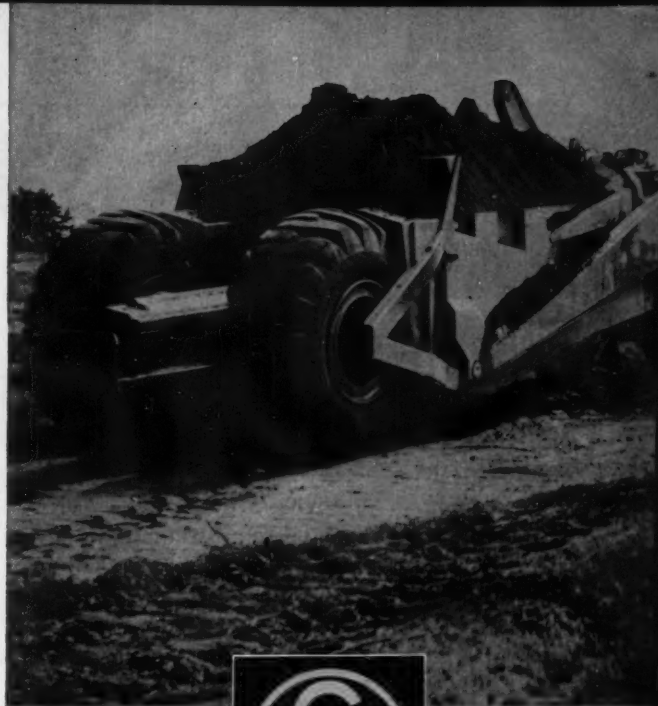
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SOUTH BEND, INDIANA

DISTRIBUTED IN CANADA BY CANADIAN CURTISS-WRIGHT, LTD.

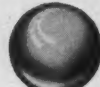


**MODEL CWD-221**

### INTERCHANGEABLE REAR DUMPER

. . . one of the three rear dumpers in the Curtiss-Wright line. Interchangeable with two or three axle scrapers, C-W rear dumpers are available in capacities to 35 tons.



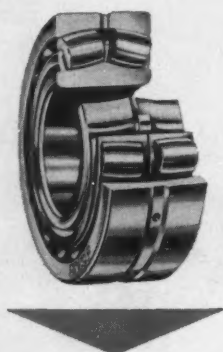


Spherical, Cylindrical, Ball, *Taper* and REED Miniature Bearings

## ANGULAR CONTACT BALL BEARING

This is the bearing to use when you need a high-speed bearing to support either (a) heavy thrust load, or (b) thrust load combined with radial load. It lends itself to various mounting arrangements. For example, if you need axial rigidity and high radial capacity you can mount two of these bearings in pairs either face-to-face or back-to-back. Or, if very high thrust capacity is needed, you can mount two or more of these bearings in tandem.

This standard bearing is available in over 80 sizes of single- and double-row types. Bore sizes range from  $\frac{3}{4}$ " to just over 7".



## SPHERICAL ROLLER BEARING

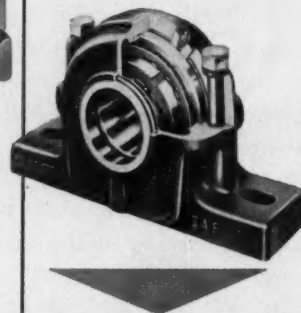
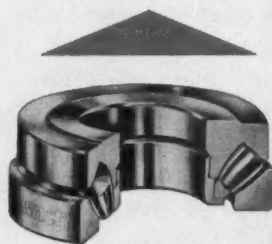
SKF invented the spherical roller bearing almost forty years ago. Since then, we've improved the original design several times—so that, today, our Type "C" spherical roller bearing offers longer life and  $33\frac{1}{3}\%$  greater capacity.

This increased capacity is largely due to the number, size and shape of the rollers—and the improved accuracy with which they're guided. Because these bearings are inherently self-aligning, their full capacity is always available for substantial thrust load in either direction as well as heavy radial load. These bearings also have special lubricating grooves that channel lubricants directly to the spherical rollers.

## SPHERICAL ROLLER THRUST BEARING

Need a thrust bearing capable of carrying unusually heavy loads? Then specify this self-aligning spherical roller thrust bearing. It will carry either heavy thrust or combined thrust and radial loads. Because of its ability to carry high thrust at high speeds, this bearing is frequently chosen over large angular contact ball bearings for heavy-duty applications.

SKF makes this bearing in twenty-five standard sizes ranging from 4.3" to 14.9". And it's competitively priced.



## TYPE SAF PILLOW BLOCK...with self-aligning ball or spherical roller bearings

Here's a rugged cast-iron pillow block that provides high efficiency with low friction.

We make this split pillow block with ball bearings for normal loads and with spherical roller bearings for heavy loads. We also equip it with Triple-Seal rotating rings that effectively protect the bearing from abrasives and corrosives, and prevent oil or grease from leaking out.

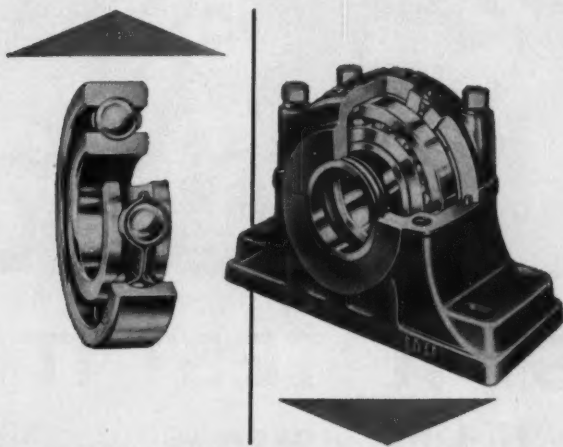
This pillow block can be mounted directly or with an adapter. Stabilizing rings are provided at no extra cost for applications where a "held" bearing is required to maintain shaft location. For heavy-duty applications, a cast steel housing (Type SAFS) is available. Shaft sizes from  $\frac{3}{4}$ " to  $10\frac{1}{2}$ ".

Only SKF can offer you unbiased bearing recommendations—because only SKF produces all four major types of anti-friction bearings: spherical, cylindrical, ball, and tapered roller bearings. For complete details on each type, just call the nearest of the twenty-four SKF sales offices.

## SINGLE-ROW DEEP-GROOVE BALL BEARING

Here's a ball bearing that does two jobs, and does both of them well. It sustains heavy radial load as well as thrust load in either direction. Not only that, this bearing can be grease-lubricated when used at normal speeds and lubricated with oil at high speeds.

Yet this is a standard SKF bearing, mass-produced in various sizes at our automated Altoona (Pa.) plant. It's available in over 100 sizes ranging from over  $\frac{5}{8}$ " O.D. to almost 16" O.D., and with various seal, shield and snap-ring combinations.



## TYPE SDAF PILLOW BLOCK...with spherical roller bearings

Need an exceptionally sturdy pillow block? One that can withstand abnormal shock loads or heavy thrust loads day after day? Then specify SKF Type SDAF.

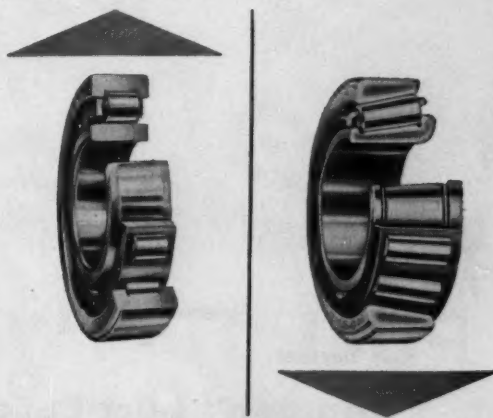
To provide maximum strength, four heavy bolts secure the cap of this pillow block to the base. Both halves are accurately aligned by dowel pins. And like the Type SAF, this pillow block comes equipped with Triple-Seal rotating rings that protect the bearing from foreign matter and retain the lubricant.

Type SDAF pillow blocks are made of cast iron but are also available in cast steel (specify Type SDAFS). They can also be mounted directly or with an adapter. Shaft sizes range from 2-11/16" to 14".

## CYLINDRICAL ROLLER BEARING

Got a space problem? Here's a bearing that gives you high radial capacity—at very high speeds—in relatively small space. It's the SKF cylindrical roller bearing—which provides high radial capacity and minimum shaft friction. Controlled shaft end float within this bearing is a natural advantage of its design.

You can get prompt delivery in 154 bore sizes ranging from just under 1" to 6". Double-row cylindrical roller bearings are also available in bore sizes from 1" to 9.5".



## Tyson TAPERED ROLLER BEARINGS

What type of tapered roller bearing do you need: single-, double- or four-row? SKF's division, Tyson Bearing Company, makes all three of these types in a wide range of standard sizes.

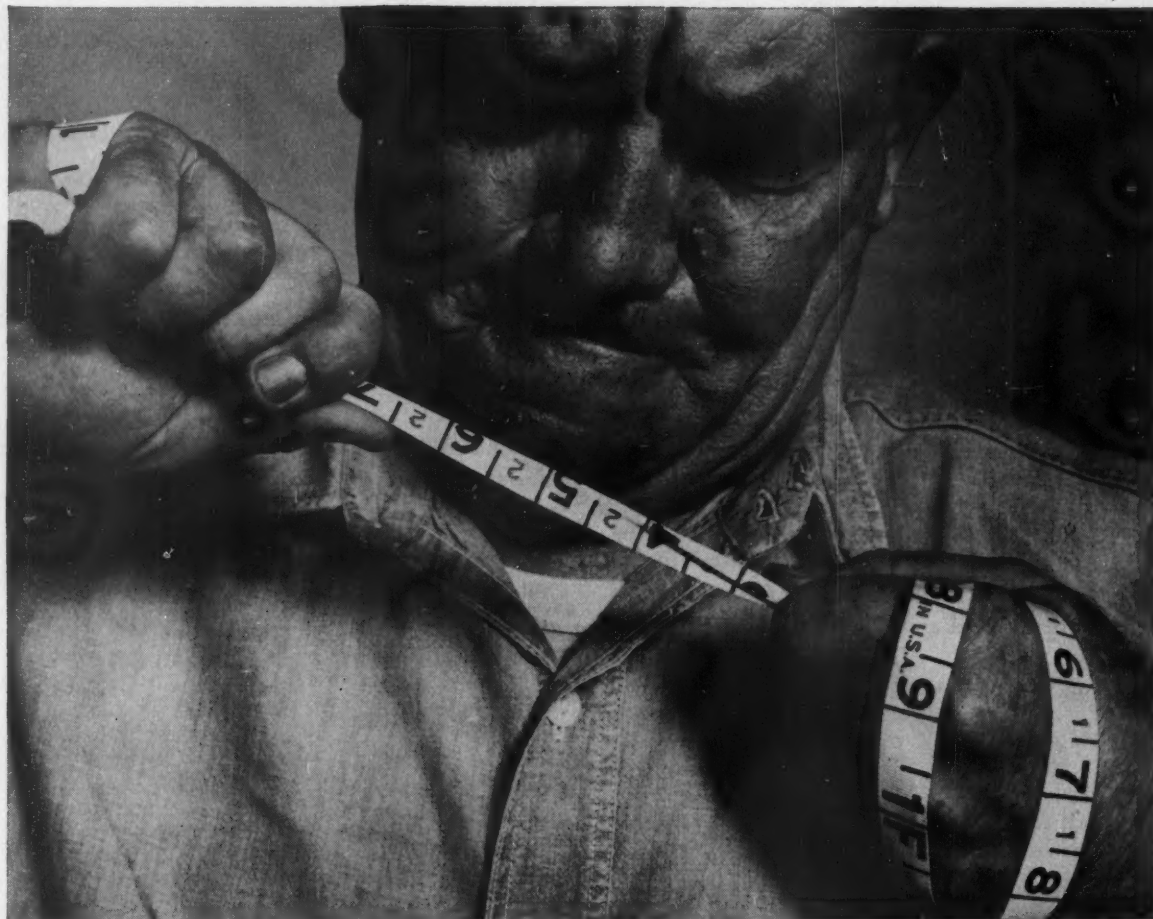
The single-row type is especially suitable for carrying radial loads simultaneously. Double-row types are designed for use where the radial capacity of two single-row bearings is required. For special applications, the four-row type offers very high radial capacity in limited space.

All Tyson tapered roller bearings are interchangeable, size for size, with other makes of tapered roller bearings where the part numbers are the same.

5949

\*REG. U. S. PAT. OFF.





# PULL IT • TWIST IT • TEST IT

**You can't hurt Lufkin "Hi-Line" woven tape!**

**Prove it for yourself!** Take Lufkin's Hi-Line tape and use it, *abuse* it, and use it again. It's woven from tough, new, miracle fibers that give you more strength and durability per inch than any other nonmetallic tape!

In addition to sheer strength, the Hi-Line features long-lasting black markings that penetrate deep into the fibers . . . and *instant* reading (preceding foot number is repeated every inch of the way). Special plastic coating resists abrasion and temperature changes; won't

absorb moisture. And the Lufkin Hi-Line is *heat set* to length, to very close tolerances. Up to 150' lengths.

**Here is a long-term investment** in dependable service, reeled in a genuine leather case. Now at your local Engineering Supply House.

*Measure for measure, the finest made...*

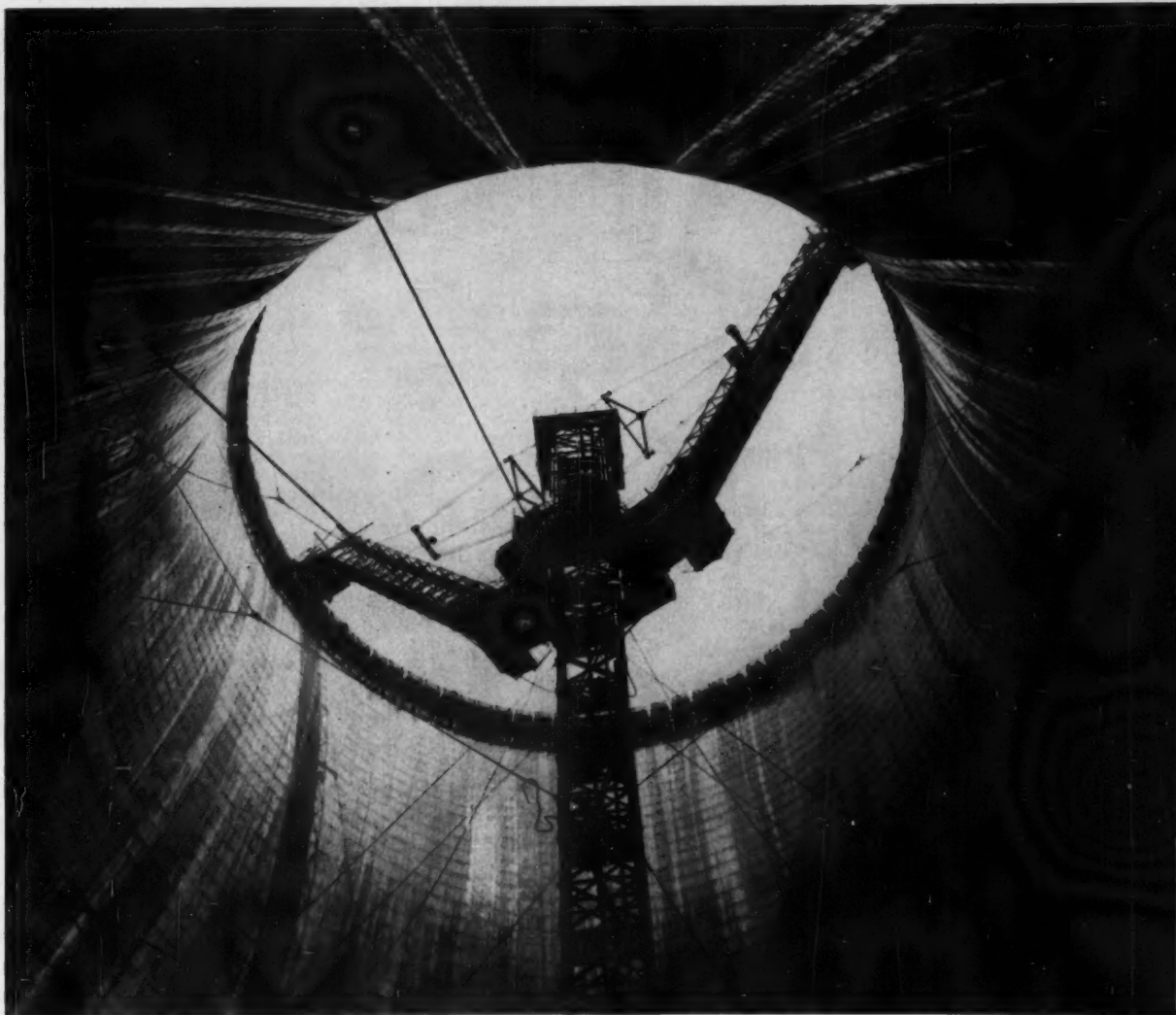
# LUFKIN

SAGINAW, MICHIGAN



## ***Tall Hoist Tower Can Reach With Two Arms***

**PICTURE  
OF THE  
MONTH**



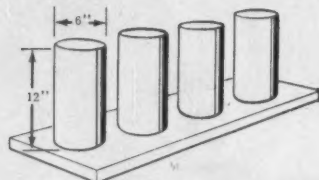
● In Cape Town, South Africa, a specially-designed hoist tower services forms for a cooling tower under construction at Athlone Power Station. Central tower carries an access ladder and a 10-cu-ft concrete skip. The arms revolve on a turntable. One arm handles the skip (skip is now halfway up the right arm); the other arm handles reinforcing steel. Concrete crews, using climbing forms, pour one lift per day. Christiani & Nielsen Ltd., the contractor on the job, designed the hoist tower. The cooling tower is 287 ft high. Walls are 24 in. thick at the bottom, taper to 5 in. at the top.

### CONCRETE TEST CYLINDERS—the right way to make them

A concrete test specimen seldom seems very important at the time it is being made. However, if trouble develops with concrete on a job, the test specimen immediately becomes a critical factor, regardless of the size of the project.

A concrete producer can guarantee concrete strength only if test specimens are made and cured according to standard methods. Concrete compression tests are made to determine concrete quality. If curing conditions, methods of sampling and methods of casting are allowed to vary, strength results are worthless because one can seldom determine whether a low strength is due to poor quality concrete or poor practices after concrete left the ready mix truck. For reliable test results, the following test procedures should be followed:

#### 1. Use only non-absorptive molds



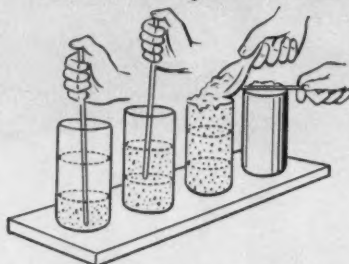
Steel, or paraffin-sprayed paper molds, 6" in diameter by 12" high, are usually used for casting concrete cylinders in the field. Before filling, they should be placed on a smooth, firm, level surface. A single strength test is generally defined as consisting of an average of 3 standard test specimens. Therefore, be sure to make at least 3 cylinders for each age test—usually 7 and 28 days.

#### 2. Take sample from 3 parts of load



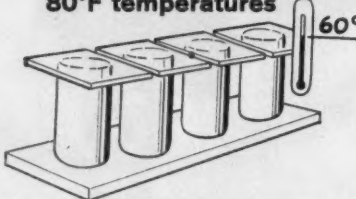
A sample should be obtained from at least 3 parts of the load and taken directly from the truck or mixer discharge. Before filling the molds, the individual portions of the sample should be thoroughly re-mixed in a large flat pan, wheelbarrow or on other clean, non-absorptive surface.

#### 3. Fill molds in 3 layers and rod each layer 25 times



Molds should be filled in 3 equal layers, and each layer rodded uniformly 25 times with  $\frac{3}{8}$ " bullet-pointed rod. When rodding upper layers, the rod should just extend through into the layer underneath. All molds should be filled uniformly—that is, place and rod the bottom layer in all samples, then the 2nd layer, etc. The 3rd layer should contain an excess. After tapping sides of mold with rod, strike off excess with trowel.

#### 4. Let cylinders stand from 12 to 24 hours in 60° to 80°F temperatures

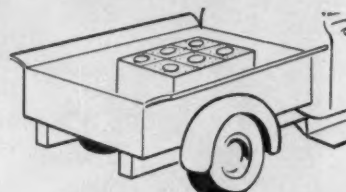


Cylinders should be left undisturbed until they have hardened enough to withstand handling—from 12 to 24 hours after casting. Tops should be covered with glass plates, oiled paper, wet burlap or similar material to prevent loss of moisture. The temperature should not drop below 60° or rise above 80°F where cylinders are stored. Cylinders left on the job for several days at low or high temperatures will give erratic results unless carefully protected.

#### 5. Cure and handle cylinders with care

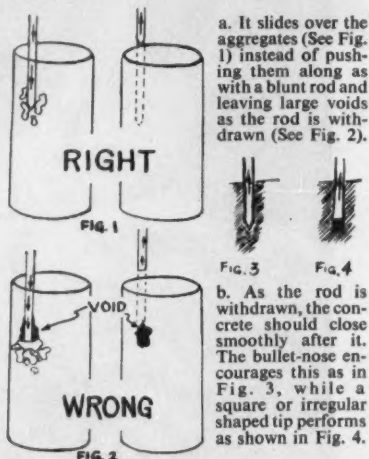
After setting for 12 to 24 hours, cylinders should be placed in moist curing at 70° or

sent to a laboratory for standard curing. Careful handling is still necessary since cylinders which are allowed to rattle around in a box, or the back of a car, or pickup, can suffer considerable damage. Use sawdust or similar material for cushioning.



#### Use a bullet-nose rod

The purpose of rodding test cylinders is to compact the concrete and make it free of the large air voids which reduce strength. Too many people reach for the handy piece of reinforcing steel to rod the concrete. Some just kick the mold instead of rodding. It has been found that the bullet-nose  $\frac{3}{8}$ " rod does the job best for two reasons:



Reprints of this page are available free of charge. Contact your local Alpha representative or the home office.

# ALPHA

PORTLAND CEMENT COMPANY  
Alpha Building, Easton, Pa.





## After 20,000 hours of trouble-free power "Old Faithful" retired by new UDT-817!

An International UD-24 engine—called "Old Faithful" by her owners—has racked up 20,000 hours of continuous trouble-free performance on a rock crushing job in Kansas. That's an average of nine hours per day for six years! At 13,000 hours a gasket had to be replaced, but there have been no major repairs. The operation, owned by Roy Baker of Valley Falls, produces 900 cu. yds. of crushed rock daily with a 32 x 40 Universal crusher.

Partners in the company, Mike and Bert Baker, say, "We decided to retire our old faithful UD-24 after it had piled up nearly 20,000 trouble-free, hard-working crushing hours. The new UDT-817 was chosen because of its greater power, direct starting and easy installation. Fuel consumption on the 817 is low, considering the power we get. And with all that power we can eliminate secondary crushing by just reducing the jaw opening."

Roy Baker says, "Of course I bought another

International!" And that about sums up the attitude of contractors all over the country—they know from experience that Internationals stand up under heaviest work, are immune to dust and grit—and will pay back the investment faster than any other.

Check with your International Engine Distributor or Dealer soon, and find out how little it costs to power—or repower—your equipment with International engines. See the full line of engines and power units—16.8 to 385 max. hp.

**INTERNATIONAL<sup>®</sup>**  
**HH ENGINES**

International Harvester Co.,  
180 North Michigan Ave., Chicago 1, Illinois  
A COMPLETE POWER PACKAGE

**ALL OVER THE U.S.A., CONTRACTORS**

# power-steer and power-shift

**NO ATTACHMENT! NO AFTER-THOUGHT! NO "STOP-GAP"!**

Exclusive, years'-proven combined Planet Power-steering and Hi-Lo power-shifting are designed-in, built-in, basic standard equipment of the new 230-hp International TD-25!

Simplified TD-25 design is the only planetary system engineered and located to give you the dual advantages of "live track" steering and on-the-go shifting!

"Live track" Planet Power-steering eliminates load-limiting "dead-track drag"—gives power to pull full loads on turns, as well as on straight-aways. On-the-go, Hi-Lo power-shifting does away with time-wasting "gear-shift lag"—lets you match power to load instantly for full-speed cycles!

No wonder the new TD-25 can outearn king-sized clutch-steered crawlers up to 50%—on push-loading; land-clearing; overburden removal; benching; "mass-

production" dozing; ripping; other tough jobs!

New TD-25 seven-roller tracks are strength matched to the full effort of the new 230-hp diesel engine. The "25" is platformed on super-rugged double-box beam frames—and is smoothly carried on International's dual-protected Dura-Rollers, the track rollers that make 1,000-hr lube intervals practical!

**Power-shift and power-steer the "25" with king-sized loads—around curves, upgrade, anywhere.** Compare the advantages of getting this exclusive performance, and getting it from years'-proven standard equipment. Prove what's behind the "25's" rapid rise to nationwide contractor acceptance. Let your International Construction Equipment Distributor demonstrate!



◀ Though "out-rated" 105-hp by a king-sized, clutch-steered competitor, this nimble TD-25 proves able to outwork "the big one"—side-casting and benching to build Pacific Northwest mountain logging roads!



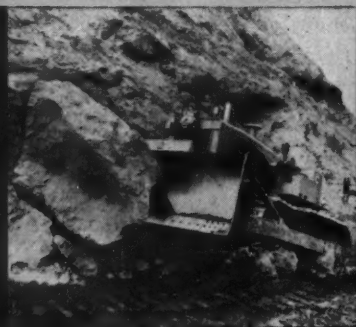
***International  
Construction  
Equipment***

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.



Three new International TD-25's of contractor V. E. Posey's fleet team up to prepare homesites from a mountainside—near San Diego, California. Dual-valving of the "25's" direct-start DT-817 engine provides for peak turbocharging efficiency—to deliver full-rated performance, from sea level to timberline!



Cleaning the face of a Missouri strip mine behind a big dragline, this TD-25 pushes "tractor-sized" boulders aside with the greatest of ease. This "25" also builds dragline walkways and haul roads—and drastically cuts land-clearing costs for Peabody Coal Co.



For cycle-speeding push-loading, TD-25 power-shifting helps give "feather-touch" contact; maintains solid push-block contact on curves; gives gear-higher kick-outs than ordinary. The two "25's" tandem pushing the International 295 Payscraper®, and the third one ripping, belong to superhighway contractor Ed Bentley, Sylacauga, Alabama.

# with TD-25 standard equipment!

---



One of the 3 new TD-25's owned by J. F. White Contracting Co., Westwood, Massachusetts, clearing huge boulders from expressway right-of-way — proving how "live-track" Planet Power steering speeds handling of king-sized offset loads!





*...only  
clam-action 4-in-1's  
upgrade your  
income with...*

**GRADE** Use "carry-type scraper" action to grade with inch-close, labor-saving accuracy. Watch the earth boil into this 1½-cu. yd. Four-in-One as the operator does precise finish-grading.

**GRAB** Only the clam-action 4-in-1 lets you sit, grab, lift, and load "impossibles" like stumps, concrete, and rubble of all kinds. This action helps make the 4-in-1 a big money-maker for land and site clearing—cuts your equipment investment.

## "equipment spread"

Put the whole "equipment spread" of International Drott 4-in-1 actions to work. Prove in minutes that each 4-in-1 action doubles for one or more specialized machines; that each action gives you a great range of job-handling working positions; that you're really getting a "Forty-in-One"! Compare 4-in-1's

exclusive shock-swallowing Hydro-Spring performance protection. See what it means to upgrade your income with a 4-in-1, far above what an old-style single-action loader, or any other limited-duty rig can earn you. Let your International Drott Distributor demonstrate!



International Harvester Co.,  
Chicago 1, Illinois

**INTERNATIONAL®**  
**DROTT**

® Drott Manufacturing  
Corp., Milwaukee  
15, Wisconsin

**BACK-DRAG** Pull down materials wholesale (and safely) from the sand or gravel bank. And grade hard-to-get-at slopes with easily-controlled 4-in-1 back-drag action—which you get by simply moving a lever!

**SCARIFY** Use the scarifier attachment to loosen stony or compacted soils for easy loading or blading. The third valve of the standard International Drott hydraulic system provides the control power for the scarifier.





**STRIP** Set the 4-in-1's clam in "carry-type scraper" position—strip sod or topsoil with efficiency to match specialized, single-purpose stripping equipment. And get jobs other rigs can't do.

**SPREAD** On-the-go, put down a layer of topsoil, fill dirt, or "cover" with exclusive 4-in-1 "carry-type scraper" accuracy. Regulate thickness of layer you spread, with fingertip ease!

# utility!

**BOTTOM-DUMP** End the sticky materials problems, for good! Opening the clam of this 2¼-cu. yd. TD-15 Four-in-One pulls material from bucket surfaces—gravity down-pull does the rest—to assure positive, self-cleanout bottom-dumping.



**PICK-UP** Employ easily-controlled clam action to fill the 4-in-1 with elusive loose materials, in one fast gulp—and without "chasing" them. Watch this 1½ cu. yd. TD-6 Four-in-One! You eliminate need for hand-shovel clean-up labor!



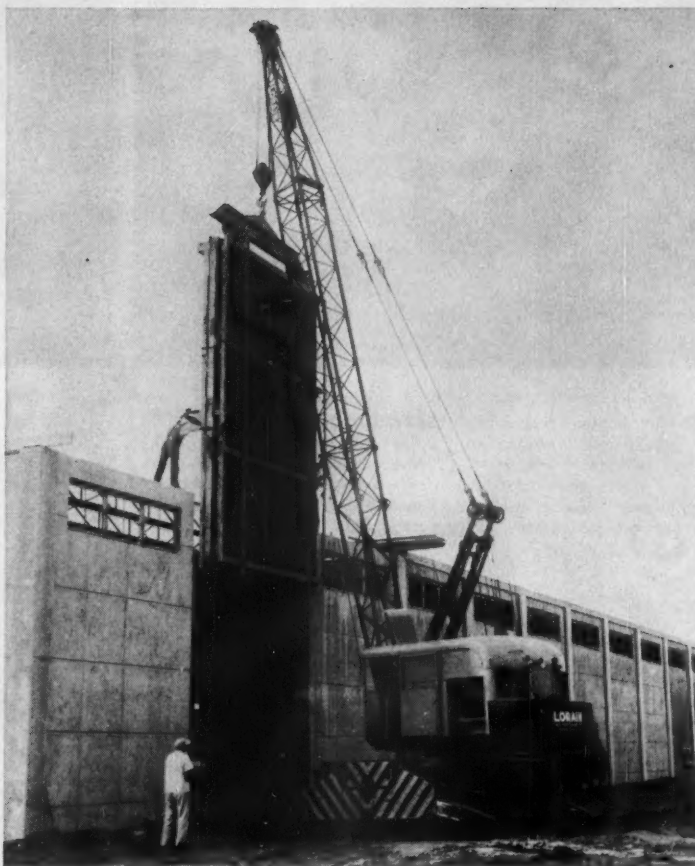
**DO SHOVEL WORK** Apply famous 4-in-1 pry-over-shoe break-out power and get power-shovel-like excavating force. This 3-cu. yd. TD-20 digs up concrete slab, tons at a time with up to 43,150 lbs. of break-out force—replaces a boom-type rig here!

**BULLDOZE** Open the 4-in-1's clam and you've got a full-capacity, earth-rolling dozer—depth-regulated by positive radius control. This action can "double" for a specialized dozer 'most anywhere! And it's instantly available at a touch of the "job-selector" lever!



**"Tilt-Frame" method used to erect 14 buildings.** In a patented process, developed by Garmon Construction Company of Fort Worth, reinforced concrete wall sections are poured into steel frames and put in place less than 24 hours after pouring, cure on the job. Fast, "Power-Set" Outriggers team up perfectly with this fast construction procedure.

**Moto-Crane moves up fast as building grows.** "Power-Set" Outriggers are partially retracted for ground clearance in 20 seconds. The Moto-Crane moves along for the next lift, and the outriggers are set in another 20 seconds. Maximum capacity and stability for every lift . . . no lost time.



## MOTO-CRANE SETS OUTRIGGERS IN 56 SECONDS TO ERECT CONCRETE WALL SECTIONS

**"Power-Set"\* Outriggers**—Lorain's pace-setting development—speed building at Richland Industrial Park in Fort Worth, Texas.

When Gorbett Brothers of Fort Worth, owner of five Lorains, moves in with a 35-ton Lorain Moto-Crane MC-530W to erect reinforced concrete wall sections, the operator can position the "Power-Set" Outriggers in less than a minute. During an 8-hour day this Moto-Crane handles 16 twenty-ton panels. This means many moves a day with a new outrigger set-up each time . . . but it is a breeze with Lorain "Power-Set" Outriggers.

**Quick leveling in tight quarters**—Each outrigger is independently controlled . . . adjusts to proper spread for

working alongside walls. Each adjusts automatically to sloping or uneven ground. Machine is always level.

**Positive security with wedge locks**—After the four independently controlled and hydraulically powered curved beams move into position, wedge locks automatically take over. No hydraulic pressure is needed to hold outrigger beams in the extended working position.

A Lorain Moto-Crane is the fastest way to get to the job. Lorain "Power-Set" Outriggers provide the fastest way to move around on the job. See your Lorain distributor today, or write direct for a booklet.

\*Patented

**THE THEW SHOVEL COMPANY, LORAIN, OHIO**

# LORAIN® ON THE MOVE

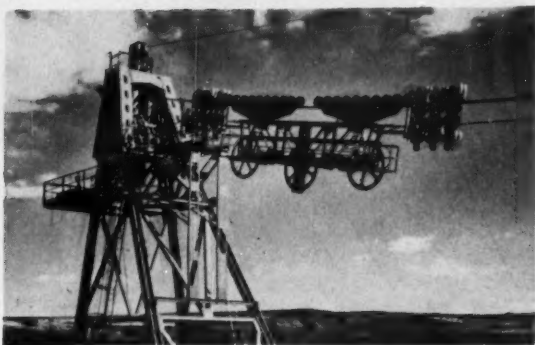
**PLANTS** in Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS**—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from  $\frac{3}{8}$ - to  $2\frac{1}{2}$ -yard capacity. Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes. Rubber tire front-end Moto-Loaders in  $1\frac{3}{4}$ - and 2-yard models . . . **OUTLETS**—Lorain products sold and serviced by 249 distributor outlets throughout the world.



# Construction News in Pictures . . .

## Mountain Airlift

Helicopter picks up drill equipment as crew prepares to move to a new location in rugged Snake River Canyon. Crew is making tests for the Washington Public Power Supply System at the site of the proposed Nez Perce Project. The man on the ledge at left directs the lifting operation because the helicopter pilot cannot see directly below.



## Fast Cableway

At Glen Canyon Dam project, a 50-ton cableway, the largest ever built for a dam project, carries two 12-yd buckets at 1,400 fpm haul speed and 700 fpm hoist speed. Merritt-Chapman & Scott Corp. hopes to pour 5,200,000 cu yd of concrete in 27 months. General Electric Co. designed the power and control system for the cableway.



## Bird-Shaped Terminal

Intricate formwork is put into place for sculptured four-shell roof of Trans World Airlines' new terminal at New York City's International Airport. The structure will require about 5,000 tons of concrete. Each shell will be poured separately in a continuous 22-hr operation. Contractor is Grove Shepherd Wilson & Kruge, Inc.



## CONSTRUCTION NEWS IN PICTURES . . . *continued*

### Aggregate Bridge

At the Corps of Engineers Ice Harbor Dam project on the Snake River in Washington, the aggregate supply is on the opposite side of the river. To get it to the job site, Guy F. Atkinson Co. built a 930-ft suspension bridge on 100-ft towers to carry an endless belt across the river. The conveyor carries 660 tph of aggregate over to the plant.

### Long Reach

With a 200-ft boom, this P&H Model 1015 crane can move a 1-yd concrete bucket to any part of the sprawling North Side Treatment Works being built by the Metropolitan Sanitary District of Chicago. The contractor on the project is the J. L. Simmons Co. of Chicago. The crane is designed to handle booms of up to 300 ft in length.



### Night Pour

Morrison-Knudsen crews are working two 10-hr shifts to complete by August, 1961, the 12 silos of an Atlas missile base near Altus Air Force Base in Oklahoma. Koehring crane handles concrete for a 13-in. floor for the control tower at one silo. The work is under the direction of the Tulsa District of the Corps of Engineers.



***There's a type and size  
just right for your job!***

Whatever your off-highway hauling work may be—heavy construction, mine, quarry and industrial jobs—there's a job proved "Euc" that can cut your costs and step up production. With unmatched field experience and parts and service facilities of a world wide dealer organization, Euclid Rear-Dumps meet today's requirements for big performance on the toughest jobs.

For facts and figures proof that "Eucs" can mean lower costs on your work and are your best investment, call the Euclid dealer that serves your area.

**EUCLID** Division of General Motors, Cleveland 17, Ohio  
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



**EUCLID EQUIPMENT**

FOR MOVING EARTH, ROCK, COAL AND ORE

**R-10** <sup>TEN</sup> TONS

**R-18** <sup>18</sup> TONS

**R-22** <sup>22</sup> TONS

**R-27** <sup>27</sup> TONS

**R-40** <sup>40</sup> TONS

**R-55** <sup>55</sup> TONS

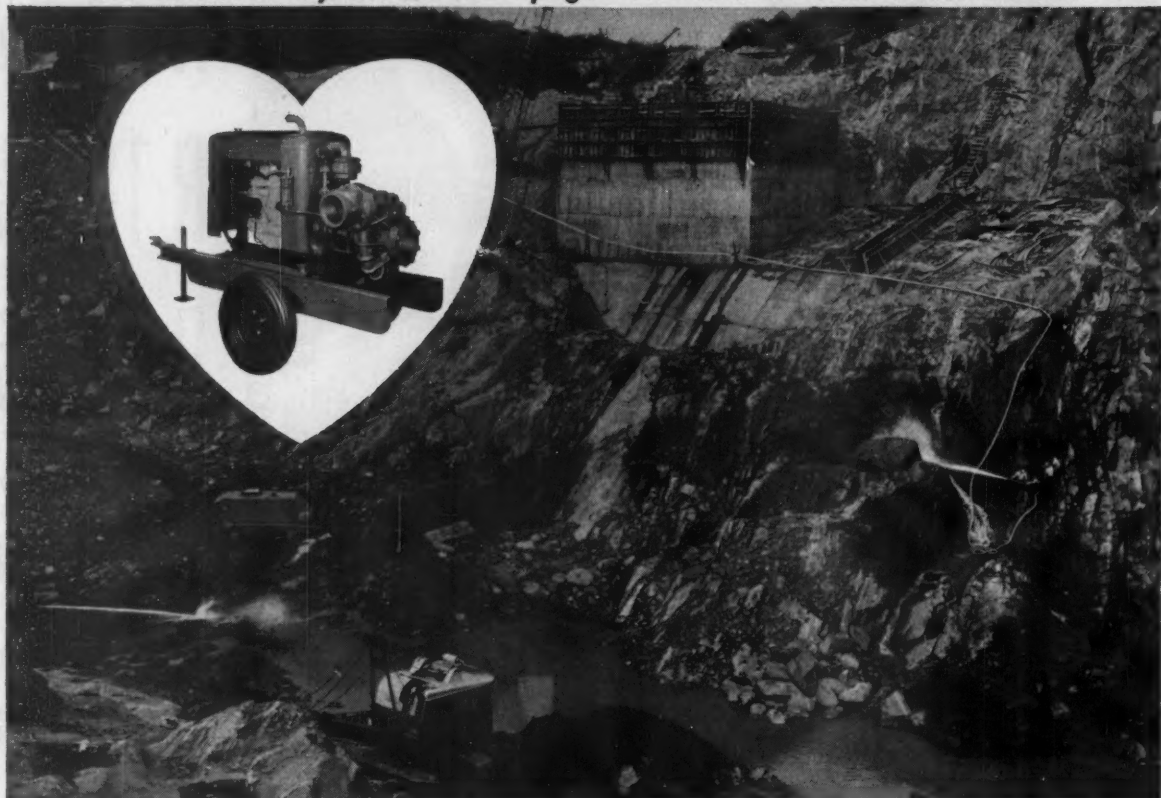
**PLUS**

**12, 22 and  
35-TON**

**SEMI-  
TRAILER  
REAR-  
DUMPS**



**The HEART of any solution to seepage water IS THE PUMP ON THE JOB!**



A Marlow high-pressure unit, almost a half-mile away, pumps water at 1,000 gpm to supply two jetting nozzles.

# MARLOW

**HIGH-PRESSURE  
SELF-PRIMING  
PUMPS** . . .

***cut costly delays  
on flood control dam!***

A unique application for Marlow jetting pumps was on a \$4,500,000 earth dam at Riverton, Conn. The dam, located on the Farmington River about 10 miles north of Winsted, is part of the flood control in the area.

The contractor used high pressure streams of water to work fines into the rock fill on the face of the dam. Two Marlows were used to supply water at 75 p.s.i. at the nozzles. These dependable Marlows pump 1,000 gpm at constant nozzle pressure, even when work was done at the top of the dam, 90 feet above the level of the river. As many as three of these 2-inch nozzles were used with the two pumps. Water drained down to a low point where a third Marlow was used for dewatering.

Marlow builds a complete line of AGC rated pumps and dependable Mud Hogs. Write today for Bulletin C-09 and the name of your Marlow dealer.



A two-inch nozzle mounted on a half-track saved time in moving the jet stream.



## MARLOW PUMPS

DIVISION OF BELL & GOSSETT COMPANY  
MIDLAND PARK, NEW JERSEY

Morton Grove, Illinois • Longview, Texas

9-577

◀ Circle 67 on Reader Service Card

Circle 68 on Reader Service Card ▲

**Ask the man who  
keeps rigs running!**

*...no one makes  
a tougher tooth  
than ESCO*



**The earth moving industry  
looks to**



The right design, the right steel, the right  
shape make ESCO Points and Adapters  
right for every digging condition.

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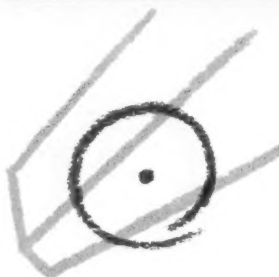
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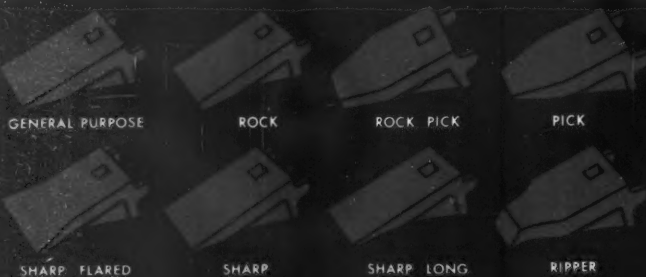
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# Here's why torque converter equipped machines do more work at lower operating cost

For higher work capacity on any given load, and for greater all-round daily production, more and more contractors are specifying torque converter drives in their new excavators, erecting cranes and loaders. And here are five good, profitable reasons why the torque converter is the preferred type of drive:

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3. When necessary, the torque converter smoothly delivers approximately twice normal torque to the drum, which, at slow digging speeds, represents an important advantage in power delivered to the dipper.

4. Cable life is extended since no sharp impact loads ever reach cables through the torque converter . . . constant line tension is maintained . . . there's no jerking or snapping.

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Wherever earth and rock are moved, wherever steel is erected, you'll find contractors using these five advantages . . . to convert their horsepower into greater-than-ever profits!

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Twin Disc Torque Converters—three-stage or single-stage, from 30 to 1000 hp—are available from all leading manufacturers of heavy-duty machines. Be sure to specify one in your next unit. Take advantage of the five reasons why torque converter equipped machines do more work at lower operating cost.

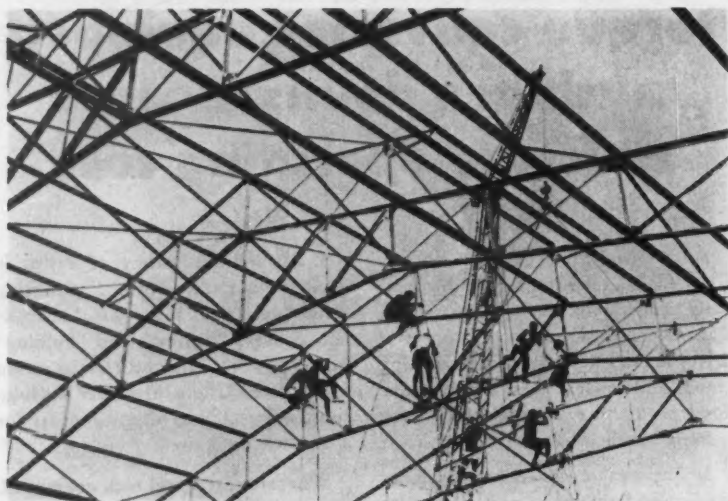
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# Construction 'Round the World...



## In Guinea

Workmen bolt steel roof truss members for a 95x354-ft general warehouse to serve the Fria alumina plant, 96-mi inland from the Atlantic port of Conakry. A P&H crane raises the members into position. The plant is part of a \$150-million project being constructed by Olin Mathieson and five European joint venturers.

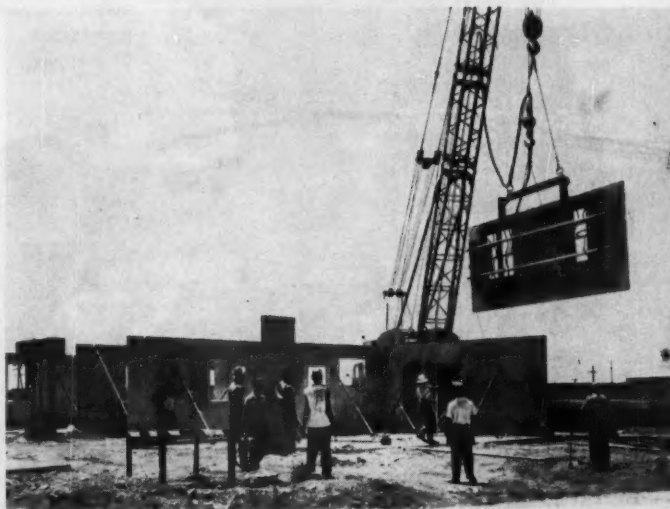


## In Canada

Caterpillar sidebooms cradle 30-in. pipe for two cleaning machines that remove rust in preparation for coating and wrapping. The 50-mi natural gas pipeline is being built by Majestic Contractors, a subsidiary of the Perini Corp., for Trans-Canada Pipe Lines, Ltd. It extends from Winnipeg to the U.S. border near Emerson, Manitoba.

## In Jamaica

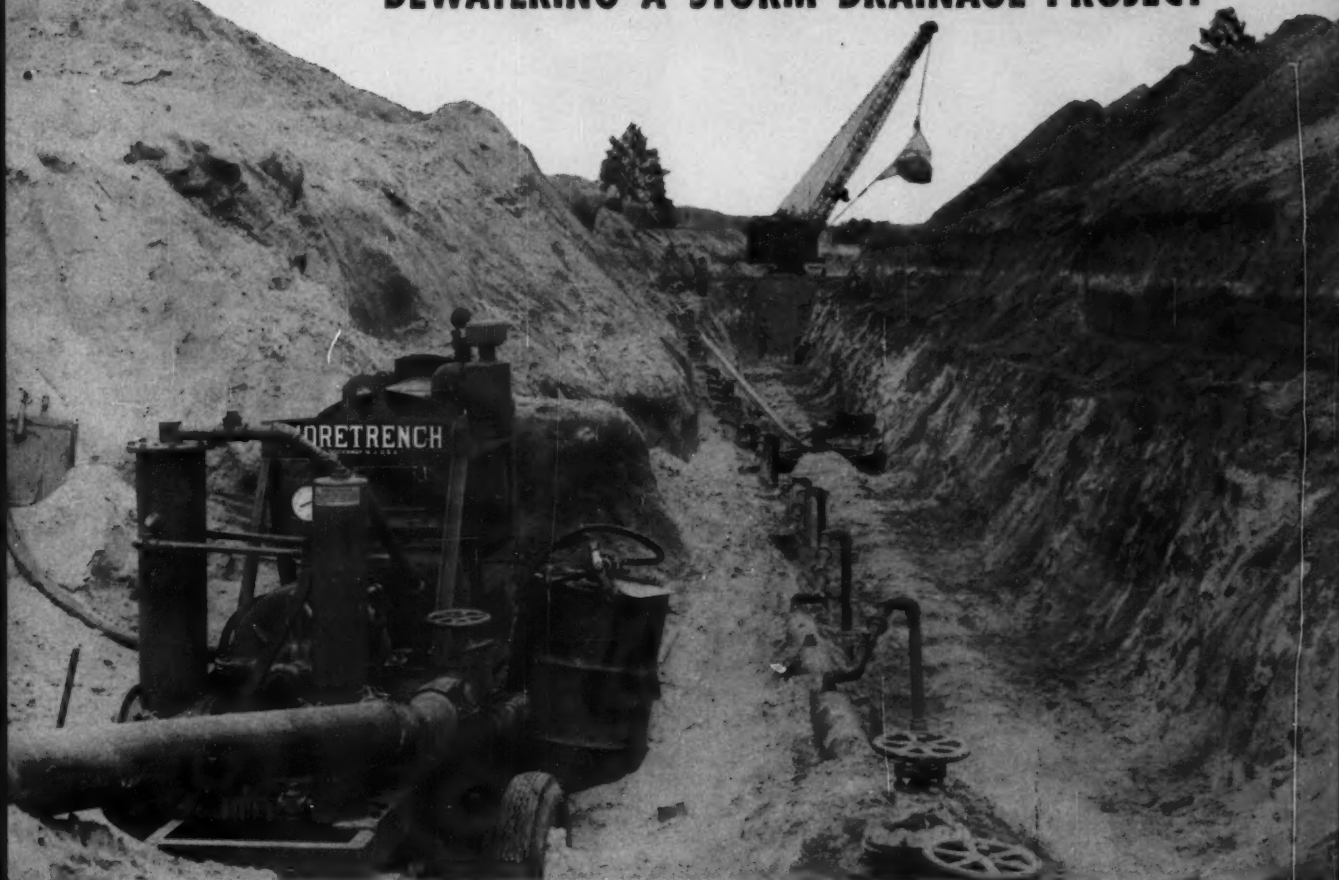
A special system of suction-cup grabs that hang from the end of a crane's hoist line lift a pre-cast concrete wall panel during the construction of a 2,000-home community overlooking Kingston Harbor. West Indies Home Contractors, Ltd., fabricates wall, roof, and partitions at casting-bed site nearby.



**ECONOMY IN ACTION:**

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Bordeaux Storm Drainage Project, Fayetteville, North Carolina  
Contractor: Crowell Constructors, Inc., Fayetteville

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## New heart for an old city

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# Construction Methods AND EQUIPMENT

OCTOBER, 1960

VOLUME 42 • NUMBER 10

HENRY T. PEREZ, Editor

## What Does This Symbol Mean



The above seal of the Audit Bureau of Circulations, which has appeared on our masthead since 1928, means that you—the reader—are the boss of this magazine. It signifies, among other things, that you have paid cold, hard cash for a subscription to *CONSTRUCTION METHODS*.

This puts us in your debt. For, in accepting your subscription payment, we also take on the responsibility for supplying you with editorial material that will be helpful to you in your work.

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So, the ABC symbol is a mark of quality and value. We are proud that it has been on our masthead continuously for 32 years.

## Those ICBM Bases

WITH ALL THE TALK these days about this country's "missile lag" behind Russia, there is surprisingly little said about the readiness of the bases from which the ICBM weapons are to be launched. Here is an area where we may or may not match the Soviets, but we certainly are lagging behind the base building schedule set by the Department of Defense.

There are many reasons why base construction has not proceeded as rapidly as originally planned. Many of these reasons, perhaps, might better be classed as excuses. But the fact remains that the ICBM bases vital to this nation's defense are not being completed on time.

One factor has been atrocious weather that plagued construction operation in the Midwest, where most of the missile launching sites are located. Another is the multiplicity of design changes that the contractor must cope with. Many of the plans call for tolerances and cleanliness heretofore unheard of in the construction business. And there are unnecessary work stoppages because of the continuing rivalry between the building trades and the industrial unions over who shall perform disputed jobs at the construction site.

That the government is aware of the problem is evidenced by the Air Force's recent transfer of top management responsibility for ICBM site activities to the Air Materiel Command's Ballistic Missile Center in California (*CM&E*, Sept., p 13). At the same time the Army's Corps of Engineers established a "ballistic missile construction office" whose head reports directly to the Chief of Engineers.

Contractors, too, must tighten up job site supervision to insure that schedules are adhered to, if not bettered. And labor must outlaw jurisdictional work stoppages. Only then will the nation get the bases it needs—built right, and on time.

Telesheeting may soon be a byword on many trenching jobs.

# Telescopic Sheetting:

By RICHARD L. BODE  
Assistant Editor

TELESHEETING, a new, safe, and economical way to shore trenches, represents one of the most ingenious developments within the construction industry in a long time. The brainchild of a construction man who has patents pending on it, Telesheeting is a system of vertical steel telescopic sheeting that has three main advantages:

- It doesn't have to be driven.
- It can be removed easily and gradually—an important factor whenever the compaction of backfill material is required.
- And it can be reused an unlimited number of times.

After spending three years perfecting the system, Joseph DeLillo has put his telescopic sheeting to the acid test while serving as project manager for a joint venture contractor currently constructing a section of the Long Island Expressway in New York State. As part of the Expressway drainage facilities, the contractor has to place 6-ft-dia concrete pipe into a 16-ft-deep trench.

DeLillo began shoring the trench with conventional wood sheeting driven in place, then switched to Telesheeting. The result: trenching proceeded four times faster, costs dropped 75%.

Since then, the contractor has shored 10,000 ft of trench alongside the Expressway with the telescopic sheeting. "We averaged 100 ft of completed trench a day, including excavating, placing the pipe, and backfilling," DeLillo says. "Four hours after we begin working on a 100-ft section of trench, we can lower in the pipe 16 ft deep." He estimates that each unit of sheeting has been used 150 times on this job alone.

The sheeting is so simple to install that it seems a wonder, at first glance, that nobody thought of it before. But closer examination reveals the tremendous attention DeLillo has paid to details.

The system has several principal parts. First, there are the "sheets," themselves. These are hollow rectangular steel boxes

about 6 ft long, open at top and bottom. Nominal cross section is 4x12 in. But actual dimensions are such that three sheets can be telescoped together as a unit. These units are hung side by side from 20-ft-long steel frames at the top of the trench. As dirt is removed from under the sheeting, the inner box sections drop of their own weight. Walers and cross-trench timbers brace the sheeting as it extends itself.

Each sheeting unit is fabricated from 1/8-in. plate steel. The first box section, which is 6 ft long, is 4 in. thick and 12 in. wide. The second section, which is 5 1/2 ft long and fits to a close tolerance inside the first section, measures 3 3/8 x 11 5/8 in. The third section, 5 ft long, is inside the second. It measures 2 3/4 x 11 1/4 in. Each section weighs from 50 to 60 lb.

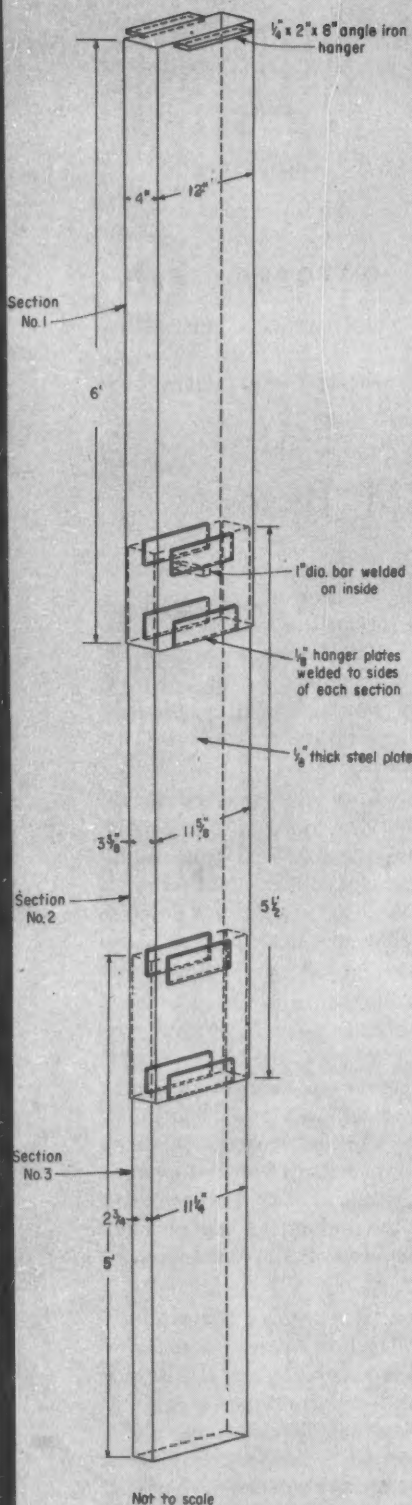
When fully extended, the sections overlap each other by 6 in. Thus, they provide 15 1/2 ft of shoring, enough for the Expressway job.

## Easily Transported

The three sections can be transported as a unit, one inside the other. A pin that fits through matching 1-in.-dia holes near top and bottom of each section keeps them from sliding apart. On the job, the sections are separated. The first section is placed on one pile. The second and third sections, remaining telescoped, are in another pile. The three sections are not slipped back together again until the sheeting operation begins.

Rectangular frames to support the sheeting units are erected over a partially-excavated trench. Each frame consists of two transverse members that bridge the trench, and two paired longitudinal members. The transverse members are 22-ft-long, 6-in. H-beams. They are the sole supporting members of the frame; their ends rest on firm ground beyond the walls of the trench. The longitudinal members are 20-ft-long, 4-in. H-beams. They serve as top walers from which the sheeting is hung.

Each frame is 20 ft long. The



**THE SHEETS**—Drawing shows a unit of the sheeting that consists of three rectangular steel boxes, open at top and bottom. Dimensions permit boxes to be telescoped.

*It's a system of sheeting that eliminates driving and can be reused any number of times.*

## A New Way to Shore Trenches

bottom flanges of the transverse beams, which are at the ends of the frame, are bolted to the top flanges of the walers. The walers are paired off, with a 4½-in. space between members of each pair. This space accommodates the 4-in.-thick first section of sheeting. The paired wales run along the edges of the trench, which puts them 8 ft 4½ in. apart c-c on the Expressway job.

When a frame is placed over a partially-excavated trench, the first sections of sheeting are slipped side by side between a pair of walers. Each first section drops through until two ¼x2x8-in. angles welded to opposite sides at the top of the section come to rest on the top flanges of the walers. Then additional walers and cross-trench timbers are placed to brace the bottom of the first section. Next, the second and third sections of sheeting are slipped into the top of the first section. As the trench is cut away under the sheeting, these sections automatically extend themselves.

Placing the sheeting under the frame's transverse beams presents no problem. The members of the frame are bolted in such a way that it is easy to slide the sheeting along the walers under the transverse beam. Workmen slide a complete unit of sheeting with all three box sections under the beam at the same time.

### Hanger Assemblies

To prevent one section from slipping through the bottom of another section, DeLillo devised a simple system of hangers. These are ½x3x8-in. steel plates. Two of these plates are welded opposite each other at the inside bottom of the first box section, and two others to the outside top of the second box section. As the sections extend themselves, the bottom of the hanger plate on the second section comes to rest on the top of the hanger plate of the first. In a similar way, the third section is prevented from slipping through the second section.

These hanger plates create the 6-in. overlap between sections. This overlap, plus the thickness



**THE SEQUENCE**—Workmen rapidly install sheets between the top walers of support frame erected at the top of a partially-excavated trench. Behind them, a lower set of walers and cross-trench timbers are already in place.

of the hanger plates, reinforces the sheeting at the critical overlapping points. In addition, two internal welded channels extending the entire length of the third section serve as stiffeners.

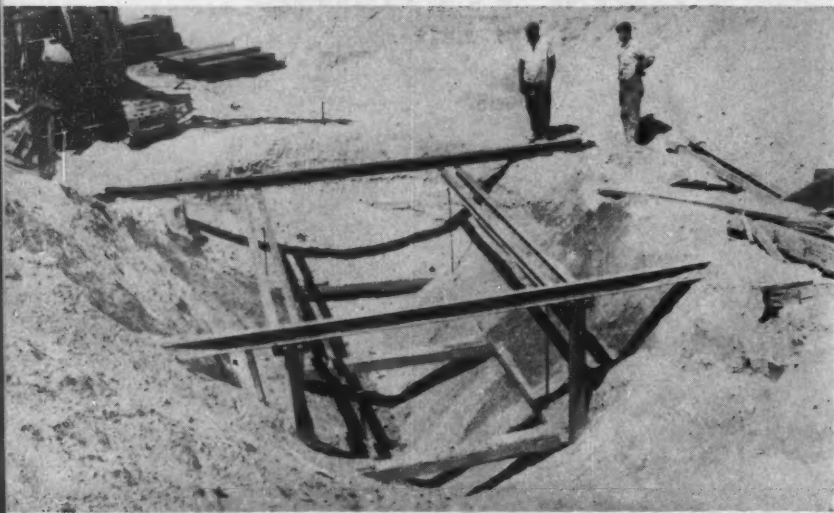
Here's the sequence DeLillo follows to construct the 8-ft-wide 16-ft-deep trench:

First, a Lorain 425 truck crane

with a ¾-yd bucket excavates a 10-ft-wide trench to a depth of 5 ft. Then crews erect the frame support across the top of the trench and drop the first sections of sheeting into place. While these first sections are being installed, workmen shovel out another foot or so of earth under the sheeting until the sheeting's angle-iron



## Small Crew Places Sheet piling Quickly To Retain Walls of 16-Ft-Deep Trench



**FRAME SUPPORT**—Frame from which sheeting is hung sits at top of trench. It consists of two transverse beams that bridge top of trench and two paired longitudinal walers.

**INNER SECTIONS**—Workman inserts second and third box sections, which are telescoped together, inside the first section. Each box section weighs from 50 to 60 lb.



### TELESCOPIC SHEETING . . . continued

supports are seated firmly on the top walers. When the first sections are in place, they act as retaining walls 8 ft apart. There is still about 1 ft of excavated trench outside each wall that must be backfilled.

Before backfilling this area, the bottom of the first section of sheeting is braced from the inside with walers and cross-trench timbers. Two 4-in. H-beams serve as this lower set of walers, one for each side of the trench. They are suspended from the top walers with 5-ft-long chains.

Next, workmen place 6x6-in. oak timbers at 10-ft centers for cross-trench bracing. A short 2x6 nailed to the top of the brace cantilevers slightly over each end and sits on the lower waler.

With the bracing system in place, the area outside the sheeting is backfilled. Thereafter, all excavating takes place between the retaining walls.

The next step calls for the insertion of the second and third sections of sheeting. Two workmen carry the telescoped sections to the sides of the trench and drop them easily through the top of the first section. Then the clam-shell digs again. When machine

excavation is no longer possible, workmen step into the trench to remove material with a hand shovel. As they dig, the sheeting extends itself. When the second section is fully extended, additional walers and cross-trench braces are placed the same way as before, about 5 ft below the previous bracing system.

This is the final set of walers. After trenching resumes and the third section of sheeting is fully extended, there is a 7 ft height of trench uncluttered by bracing.

### No Lost Motion

DeLillo works in 100-ft-long stretches that require five consecutive 20-ft-long frames to be set up. To keep the sequence going without interruption, a sixth frame and an extra set of the first sections of sheeting are kept on the job. As soon as a 5-ft-deep trench is dug beyond the fifth frame, the sixth frame is set up over it. Then the extra set of the first sections are slipped into the frame. By that time, the pipe has been placed and the trench backfilled under the first frame. The second and third sections of sheeting are removed from that first frame and put into the sixth

frame. When the first frame is completely emptied of sections, it is dismantled and carried ahead. In this way there is a continuous operation.

Here's how the removal procedure works. The trench is backfilled up to the bottom waler over the installed pipe. The waler and braces are removed, and backfilling continues up to the next higher bracing. Then a 10-ft-long hook at the end of another Lorain truck crane's hoist line is placed down inside the sheeting. The hook catches a 1-in.-dia steel bar welded across the top of the second section, and the second and third sections are pulled out together. The first section is removed with the same hook. The hook passes through the section, grips it around the bottom, and pulls it out.

A crew of ten workmen can keep the sequence going. Some workmen do double duty, switching between digging and carry the sheeting or frames.

It's not necessary to compact all the backfill to 100% of maximum density on the Expressway job because the trench is not under the roadbed. Where 100% compaction is required, the contractor raises the sheeting 6 in. at a time while tamping takes place.

**BRACING SYSTEM**—The sheeting, here extended to its full depth, is braced by walers and cross-trench oak timbers. Chains suspend lower walers from top walers.



**NEAT TRENCH**—There's a big difference in the appearance of the trench where the wood sheeting, which the contractor used at first, stops and Telesheeting starts.



**DIGGING OUT** — Clamshell works between transverse beams and cross braces to excavate trench. Workmen in the trench dig dirt away from under sheeting by hand.

As good as the system is, DeLillo has a few ideas to make it even better. He plans to increase the length of the frame to 24 ft and add a third 6-in. transverse beam to brace the walers. The three beams will be at 12-ft centers, instead of 20.

#### **Fourth Box Section**

He also plans to take the stiffeners out of the third section. He finds they're not needed. With the stiffeners out, a fourth section can be added inside the third. Increasing the length of the sections isn't practical. They would be too heavy for manual handling, and they might bind.

With these improvements already underway, DeLillo has set up a corporation, Telesheeting, Inc. of Jericho, N.Y., to rent or sell the sheeting nationally.

DeLillo is also treasurer and secretary of DeLillo Construction Co. of Farmingdale, N. Y., one of the joint venture contractors on the Expressway job. Some of the sheeting was fabricated by the DeLillo firm, some by a Long Island machine shop.

The two other members of the joint venture are Century Equipment Rental Corp. of Long Island City, N. Y., and Psaty Corp. of New York City, N. Y.



**WINCH ON WHEELS**—With tractor jacked up on digger shoe, cable pulls screed along concreted curb and gutter. Rig's backhoe with modified bucket (be'ow) dug shallow excavation.

## This Tricky Rig Helps Win More Bids



A SPECIALIST in curb and gutter installation, G. H. Tague of Boulder, Colo., consistently underbids competitors. How? A couple of simple modifications to his Ford tractor-mounted backhoe enable him to cut labor costs an astonishing 60%.

By welding upright sides to a grader blade and installing it over the teeth of the backhoe bucket, Tague eliminates much of the hand labor in digging shallow gutter excavations. The bucket with attached blade peels away the ground to the required depth, digging so cleanly that skinning with hand shovels to final grade

is no longer necessary. The loader on the front of the rig handles prime excavation.

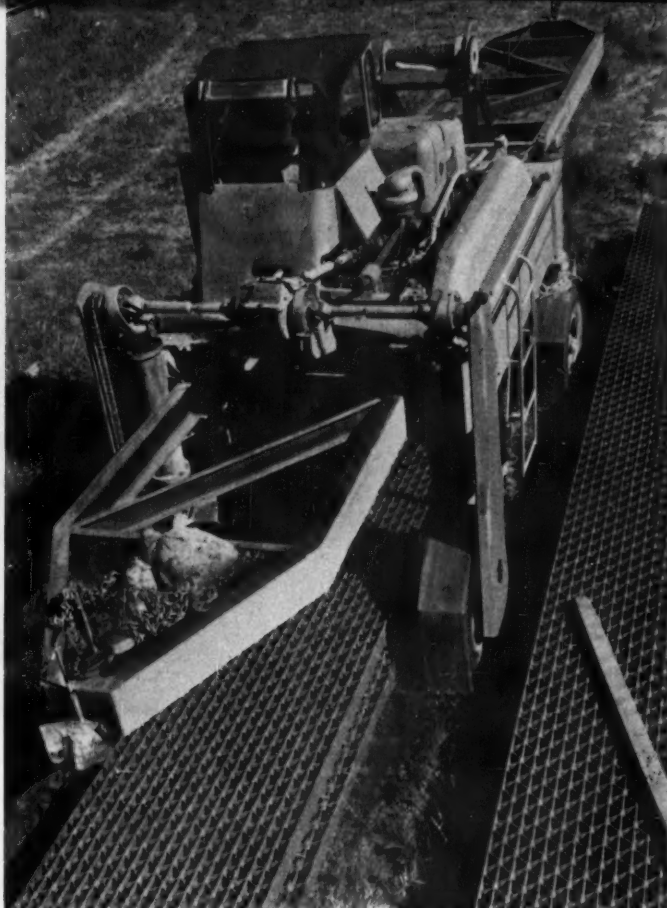
Tague also installed a spool on a rear wheel of the tractor, using the same studs used to hold wheel weights in place. With the tractor jacked up on one digger stabilizer shoe, the wheel can spin freely and wind cable on the spool. In this way Tague winches a home-made screed made up of four channels and steel plates along the strip after concrete is laid (usually chuted into place from transit-mix trucks). The winch eliminates the hand labor of trowel-finishing the wet concrete.

Tague's equipment includes a Ford industrial tractor and a Ford Super-Duty loader as well as the backhoe. The longer-than-ordinary wheelbase and the rear mounting of the backhoe make this tractor especially well suited to Tague's operation. "It's so well balanced that there's little or no bounce or wheel spin," Tague says, "so we don't have to pay damages for gouges in the asphalt streets. That's one saving, but the big thing is that we've been able to cut our crew from 10 men down to 4 men—that's the real payoff."

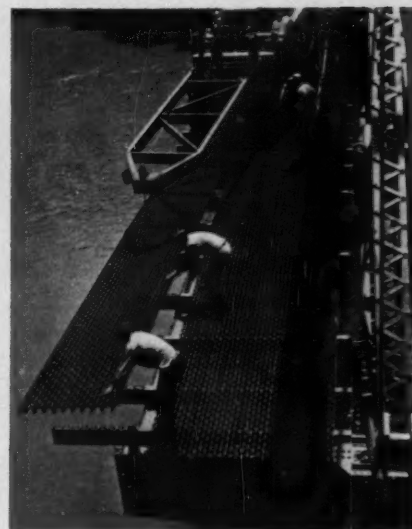


**POUR GOES SMOOTHLY**—Crew chutes concrete from transit-mix ahead of screed.





← CHORE 1.—HAULING



CHORE 2.—PLACING

*Straddle carrier fitted with a 40-ft horizontal boom hauls and places members on Missouri River bridge widening project.*

## One Rig Kills Two Chores

A STRADDLE CARRIER modified by a contractor turned an intrinsically messy bridge widening project into a routine construction chore at Sioux City, Iowa. Developed by the Foster-Smetana Co. of Omaha, Neb., the machine was the major tool in carrying out construction work on the job. Furthermore, the rig hauled all materials to and from the job site.

The job involved rebuilding, into 12-ft-wide traffic lanes, extra-strong 9-ft walkways cantilevered from each side of a two-lane highway bridge. The general work procedure was to:

(1) Remove timber decking, steel stringers, and truss-type tips of outriggers that made up the walkways.

(2) Replace the trussed outrigger sections with solid web members and add strengthened stringers, joists, and deck grating to form the two additional roadways.

A controlling factor on the job

was that the two existing inner lanes be kept open to traffic at all times. This meant that practically all work had to be carried out on the two 9-ft-wide walkways.

Using a crane to place materials would have been unwieldy. And the pin-to-counterweight distance of the smallest crane on hand able to handle the job required a swing space of 6 ft. Only 4½ ft was available.

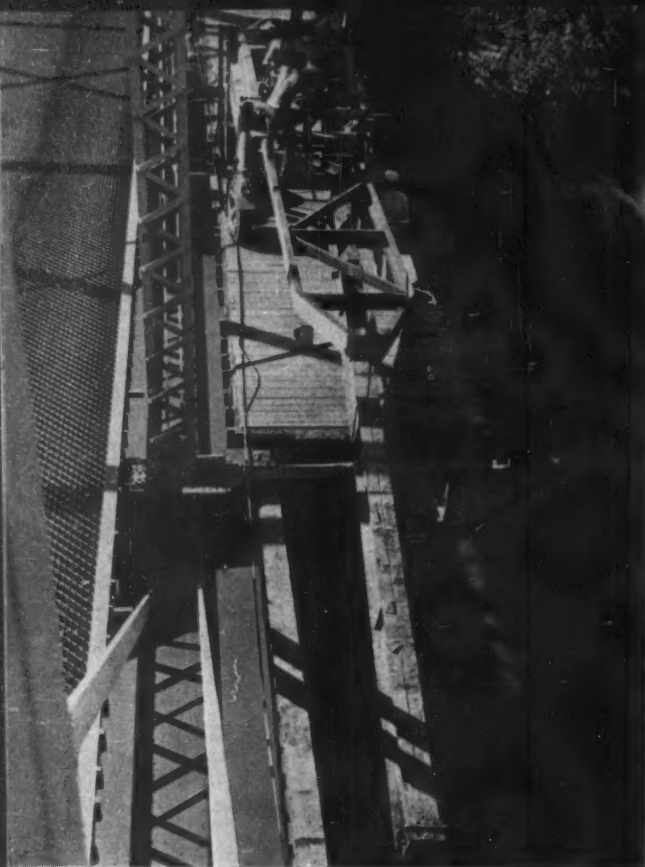
### Modified Carrier

The modified straddle rig has as its basis a Ross Model 81 10-ton carrier. Alterations include a fixed boom mounted on the underside of the machine. Projecting 20 ft ahead of the carrier body and 8½ ft behind, the boom is 40 ft long and 4 ft 8 in. wide. It is a horizontal truss with main members of 10-in. channels cross-braced with 8-in. channels. It is supported on shelf brackets welded to the legs of the carrier. For lifting, a ¾-in. cable runs from a sheave at the front of the boom

to a hand-actuated winch mounted on the boom near the rig's cab. At the rear of the boom is a tray loaded with 3,000 lb of boiler punchings for counterweight. Four-wheel steering on the carrier provides sensitive maneuverability.

The carrier doesn't swing at all. Essentially it works back and forth in a straight line. It picks up a part with its boom and then runs straight forward with the piece held out in front of it to be lowered into place. True, a crane could have been utilized in this fashion, but extra equipment would have been required to transport bridge members to the job site. On the other hand the carrier transported all members as well as placed them.

The 1,470 ft Combination Bridge, composed of one draw and two fixed spans across the Missouri River between Nebraska and Iowa, was built in 1895. It had a sort of saddlebag layout. A single-line railroad track ran down the



**LOWERING TIP**—Derrick on traveler sets 5-ft extension. Traveler is 96 ft long, 4 ft wide.

**LIFTING MEMBER**—Rig hoists old stringer clear of cantilevers and backs up to deposit it on deck.

## ONE RIG KILLS TWO CHORES... *continued*

center between the trusses. Hung on the outside were two 9-ft-wide timber-decked wagonways supported by steel outriggers cantilevering out from the bridge proper.

In the 1920's the structure was fundamentally altered. The railroad track was taken up, and a 22-ft two-lane roadway of steel decking was laid between the trusses. The outside timber wagonways were restricted to pedestrians.

With a tremendous traffic upsurge in recent years, Iowa and Nebraska officials decided to replace the walkways with two modern traffic lanes. Encouraging this plan was the bridge's initial use for trains. Designed for heavy train loads up to H-20 standards, there was no need to modify or strengthen major truss members. Clinching the decision was the cost factor. A saving of 40% over the cost of a new two-lane bridge was promised.

Framing for the timber-decked wagonways had been conventional for the 1890's. Panel points of the bridge occur on 32-ft centers. At each panel point an outrigger projects.

The girder built up of plate and riveted angles. The remaining 5 ft was a truss made up of angles. Two stringers connecting outrigger brackets were also built up of riveted plates and angles. The inner stringer was 33 in. deep, the outer 27 in.

### Outriggers Strengthened

Modernization of the outer roadways retains the basic design but beefs up the strength. The trusswork that constituted the outboard 5 ft of each outrigger was cut off and replaced with a solid plate and angle web member. The old stringers, reshuffled and reworked, were reused. Atop them in each 32-ft panel are nine joists, each 13 ft long and welded in place. On the joists, in turn, are three 4-ft-wide panels of steel grating to provide a 12-ft deck.

Dismantling of the 9-ft roadways began at the center of the bridge and worked toward the shores. First, the timber decking was cut by chain saws into pieces that could be handled by a boom-and-winch truck. This rig operated on the undisturbed portion of the 9-ft-wide deck.

When the steel framework of a

complete 32-ft bridge panel was exposed, the stringer fasteners were cut loose. The straddle carrier then moved forward on the decking until its lifting cable was above the stringer's balance point. The cable was attached and the stringer winched loose. The carrier moved backwards enough to deposit the stringer on the deck, and then moved forward again to pick up the second stringer. Next, it carted the pair of stringers 1½ mi to Missouri Valley Steel Co.'s yard to be reworked. New structural members for the bridge were stored at the yard, and the carrier returned with a load of them.

After stringers were removed, the trussed section of the outriggers had to be taken off and replaced with solid web members. For these operations Foster-Smetana set up a 96-ft-long, 4-ft-wide traveler. Essentially it was two cross-braced beams with wood decking. Spanning four outrigger stubs, the traveler was completely self-sufficient, with water cans, toilet, tool boxes, compressor, welding gear, forge, and a stock of bolts and rivets. It was equipped with a 5-ton Sasgen derrick with a 12-ft boom and two



hand-operated winches, one regulating the boom and the other the load line. A cable running from a third winch to the bridge pulled the traveler forward.

Work progressed simultaneously at four stations on the traveler. At the first, the old outrigger trusses were burned free and, using the derrick, were stored on the traveler until a traffic lull occurred on the bridge. Then the derrick swung the old segments to the existing inner roadway where either the straddle carrier or the boom-and-winch truck grabbed the sections and hauled them to the storage yard.

The first work station also handled placement of the new outrigger tips. These were fed to the traveler by a reverse of the removal process. The traveler's derrick hung the new extension, which was held in place by a couple of drift pins and bolts.

While extension removal and replacement was taking place at Station 1, crews at Stations 2 and 3 fitted and bolted previously placed extensions and reamed holes for rivets. Later, these were driven by the gang at Station 4 as the traveler advanced one panel at a time.

After the outriggers were erected, the straddle carrier brought in and placed the final members. Frequently the rig carried a package of one complete roadway panel—two stringers, nine joists, and three sections of decking.



**SETTING STRINGER**—Hand-operated winch lowers reworked stringer.



**STRENGTHENED** — Solid web members replace trussed cantilever sections.

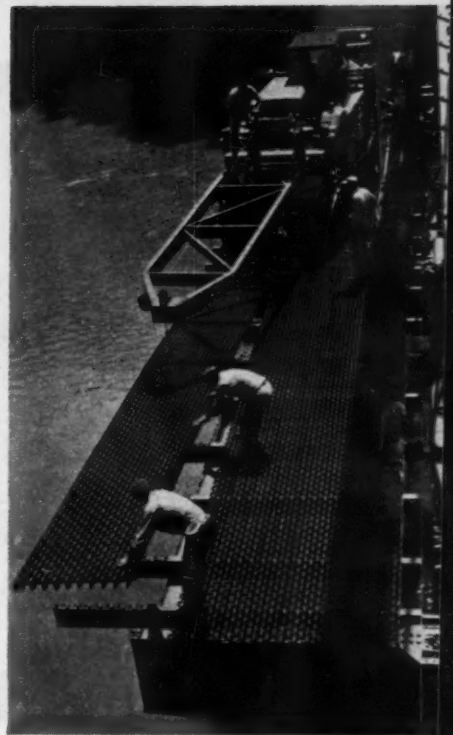
**PLACING DECKING**—Carrier positions third 32-ft steel grating section on joists to form 12-ft roadway.

The carrier brought the load right up the outside roadway to where the work was taking place. It deposited the parts and then backed up to hoist a stringer with the winch cable. The carrier drove forward on the completed decking to lower the stringer into place. After the two stringers were set, the machine similarly set the joists in position to be welded. Then the carrier repeated its operation to lay the three sections of grating, each 4x32 ft. This provided an additional segment of completed roadway and the carrier advanced to work on another 32-ft panel.

### Stringers Reused

Missouri Valley Steel Co. strengthened the salvaged stringers by flange plating them to support H-20 loads. Cover plates,  $\frac{1}{2}$  x 8 in. on the upper flange and  $\frac{3}{8}$  x 8 in. on the lower, were attached by the Lincoln submerged arc process. For extra capacity, stringers were reversed when put back in place. That is, the original 33-in.-deep stringer was shifted from the inboard to outboard position, and the lighter 27-in. member was moved to the inside setting.

Reusing the stringers resulted in substantial saving. The weight of the old ones was 240 tons. To them were added 36 tons of cover plates. New stringers would have weighed 237 tons. Reuse thus saved some 200 tons of steel and,



with reconditioning cost deducted, an estimated \$68,000. The total amount of new steel on the job, which constitutes 35,000 sq ft, is only 380 tons. This is exclusive of decking which totals 350 tons. The new roadways required 100 outriggers, 846 joists, and 194 stringers.

The Nebraska Department of Roads did the design work and handled letting of contracts. John Hossack was acting engineer; G. C. Stroble, acting deputy engineer; and A. H. Dederman, bridge engineer. Iowa, with a district office ready at hand at Sioux City, took over construction supervision. J. L. Holdefer is Sioux City district engineer. In field charge for Foster-Smetana was Cyriel Van Severen, superintendent.



Two contractors working adjoining sections of an expressway make earthmoving look easy. One has adopted a novel system for tandem-pushing after experimenting with various combinations. The other sets a fast pace with single-pushing in a deep cut.

## Push Dozer Tactics Slash Loading Time

**TAKING TIME** at the start of an earthmoving job to experiment with push-dozer combinations can pay big dividends in increased production later on. This is particularly true if, like Lizza & Sons of Oyster Bay, N.Y., you're trying to work out a tandem-pushing procedure that cuts down loading time.

Lizza, earthmoving subcontractor on a 3½-mi section of the Long Island Expressway in New York State, has a total of 1,800,000 cu yd of earth to move. Of this amount, about 600,000 yd is being taken from seven recharge basins and placed as fill on the roadbed. These basins, located on the right-of-way alongside the roadbed, temporarily hold rain water that drains off the Expressway.

Lizza's Job Superintendent Pete Ferrara, a man with 25 yr of earthmoving experience behind him, needed just a day and a half to come up with the most economical arrangement of equipment to move dirt out of these basins. Experimenting in an average-size basin, one that measures 275x360 ft and has 135,000 yd of earth to be removed, he wound up with three push dozers—two Cat D8's and one D9. These three pushers handled eight scrapers, six LeTourneau-Westinghouse B Tournapulls and two Cat DW21's.

### Trial and Error

Ferrara didn't arrive at that pusher combination right away. First, he paired off four D8's,

teaming up two in tandem on one scraper and two on the next scraper as they came into the cut. After about 1 hr of work, Ferrara wasn't satisfied with loading time of 57 sec per scraper, so he pulled out one of the D8's and substituted a D9. The D8 and D9 working in tandem improved the loading time by 20 to 22 sec over the two D8's.

Ferrara still wasn't convinced that he was getting the most for his money. So he pulled out another D8, leaving just three pushers. The D9 switched back and forth between the two D8's, assisting each one in turn. This proved to be 5 to 6 sec less efficient than the previous arrangement with three D8's and one D9. But the savings realized by not having to operate the fourth dozer more than made up for the time lost. And Ferrara had cut the original loading time by 15 to 16 sec while eliminating one tractor.

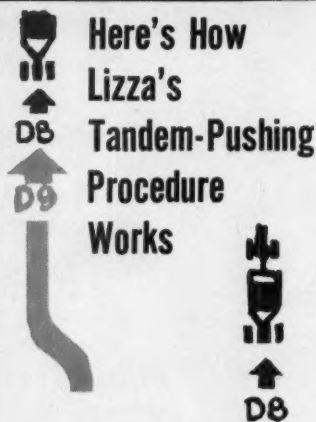
How Lizza's tandem-pushing method works is shown at right.

### C-Frame Push Blocks

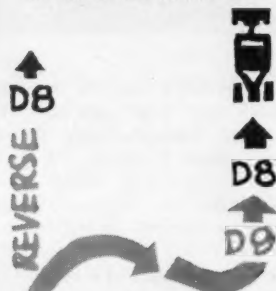
Lizza feels the D8's are well-equipped for tandem-pushing with C-frame rear push blocks, an attachment recently introduced by Caterpillar. The center of the C-frame fits on the rear tow bar, and the arms of the C-frame are secured to trunnions affixed to the track roller frames at each side.

The front ends of all three tractors carry standard dozer blades with push-block attachments. The arms of the dozer blades are also mounted on trunnions affixed to

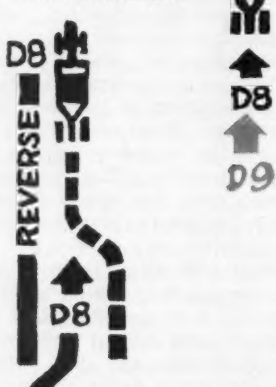
## Here's How Lizza's Tandem-Pushing Procedure Works



When a scraper comes into the cut, a D8 makes contact with it. When it's half loaded, the D9 gets behind the D8 to provide the extra horsepower. Meanwhile the second D8 makes contact with the next scraper that comes into the cut.



As soon as the first scraper is kicked out, the D9 shuffles over to join the other D8. In this way, the D9 is kept continually busy. At no time do the D8's work in tandem.



Since all scrapers enter and leave the cut in the same direction, the pushers must back-track to get into position. The D8's back-track the farthest, about 75 to 100 ft. The D9 usually doesn't have to back-track more than 35 ft.

In this way, cycle time on a 6,800-ft round trip averages 8¾ min.

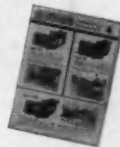


## 240 CUTS FAST ACCURATE 34"x 46" TRENCH FOR CONCRETE PIPE

This Cleveland 240 Trencher is digging trench 34 inches wide by 46 inches deep for installation of 12-inch concrete pipe in an underground irrigation system in Lunn County, Texas. It is one of a fleet of more than ten Clevelands employed by Gifford-Hill-Western, Inc., one of the leaders in the design, engineering and installation of irrigation systems throughout the Southwest. Gifford-Hill-Western uses its Clevelands for fast accurate digging of square-bottom trench for 12, 15 and 18-inch concrete pipe with a normal cover of 30 inches.

*The Cleveland 240 is used on all types of trenching jobs... irrigation and drainage projects... cross-country pipelines... gas, water and sewer lines... conduit and cable work... any trenching job up to 3' wide, down to 6' 3" deep.*

There are 10 rugged models in the complete Cleveland Trencher line—with a digging range of 8 to 52 inches wide, down to 8½ feet deep—for every type of trenching job—from house footings and utilities lines up to 36-inch cross-country pipelines. Ask your local distributor for the Cleveland Full Line Bulletin L-109... or write:



# CLEVELAND TRENCHER

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

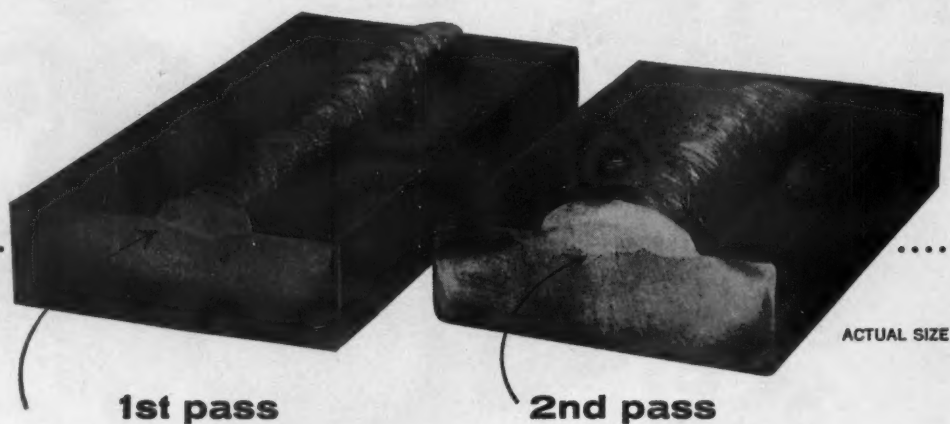
OCTOBER, 1960

Circle 87 on Reader Service Card

87

# STOODY BUILD-UP

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**FIRST PUSHER**—As scraper comes into the cut, a Cat D8 gets behind it. The pusher is equipped with C-frame rear push block fixed to trunnions on the track roller frame.



**SECOND PUSHER**—During early experimenting, second D8, which was later replaced by a D9, moves into position. It has conventional dozer blade with push-block attachment.

## PUSH DOZER TACTICS . . .

*continued*

the track roller frames. As a result, the force of the rear D9 is transmitted through the arms of the C-frame almost directly to the dozer arms of the D8. And no strain is placed on the rear drive of the tractor.

The push-block attachment is hung on brackets welded to the rear of the dozer blade. Two hooks, one at each side at the top of the push block, loop over the blade and are pinned to the brackets. A narrow plate that acts as a cutting edge is bolted to the cutting edge of the dozer blade. This plate overlaps the lower edge of the push block, holding it firmly in place. With this setup, the pushers can still take on dozing chores whenever necessary.

A. E. Ottaviano of Croton-on-the-Hudson, N.Y., is the general contractor. Pete Cerlini is resident engineer for the New York State Dept. of Public Works.

*More about expressway earth-moving on page 92.*

## A NEW NAME FOR CONCRETE FORMS SIMPLEX-WACO *Self-Aligning*

### HEAVY DUTY CONCRETE FORMS

The name is new because Simplex Forms System, Inc. has purchased the concrete forms division of Waco Manufacturing Co.! And, while the basic Waco forms design is the same, you can count on years of Simplex experience to bring you the finest in quality and workmanship in Simplex-Waco forms.

Ideal for all types of concrete forming, these rugged, flexible forms will now be available on a wider scope through greater distribution.

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### AN OUTSTANDING EXAMPLE OF SIMPLEX-WACO SIMPLICITY

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1

2

3

4

## This pipeline job could cost lives, limbs, cut profits, if...

- ① Highway traffic runs into ditch.
- ② Pavement is undermined.
- ③ Welding shields are inadequate.
- ④ Sidewall of ditch caves in.

Installing or repairing pipe underground can be a dangerous job. While the work is going on an accident could suddenly break down your schedule, resulting in loss of men, materials, equipment . . . money.

Combatting accidents is one of your most troublesome jobs, but the experienced advice that AM men can give you may be of considerable help in saving lives, limbs and dollars. And that in turn could mean lower operating costs, lower insurance rates, and a better bidding position on your next job.

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**IN THE CUT**—Three D8's work singly to push-load three DW21's. After kicking out scrapers, the tractors will back-track from 50 to 75 ft to get in position for the next push.

## Big Fleet Levels a Steep Slope

ON ANOTHER section of the Expressway, Zara Contracting Corp. of Hicksville, N.Y., is moving 1,100,000 yd of earth along a 2½-mi stretch. Zara's greatest concentration of equipment is on the roadbed where they are making a 70-ft-deep cut through a hill. The cut, believed to be the deepest ever made on Long Island, is 1,000 ft long. Zara's job is to reduce the grade from 20% to 3%.

### The Initial Cut

At the outset, the grade was so steep and traction so poor that Zara couldn't work with the usual self-propelled four-wheel scrapers. The first 30 ft of the cut had to be made with a fleet of scrapers drawn by crawler tractors. For this operation, Zara assembled six Isaacson, three Garwood, and three Cat 80 scrapers. The pulling was handled by seven Cat D8's and five Allis-Chalmers HD-24 crawlers.

After a couple of weeks with this equipment, Zara was able to settle down to high-production earthmoving with eight DW21's and one B Tournapull, plus three



**IN THE FILL**—A No. 12 grader spreads fill while a scraper moving downhill at top speed unloads. Nine scrapers on job average 5-min cycle time on 3,000-ft round trip.

*Fastest Growing Line in The Industry*



# BUILDING BRIDGES? MARIONS ARE!

Across the country . . . around the world . . . hundreds of bridges are and will be going up in the '60s with the help of Marion bridge cranes. Here are just a few of the reasons why contractors everywhere are turning to Marions for such exacting work; why you can expect your bridge building profits to shoot skyward when you use a Marion.

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No matter what machine you're now using for your bridge crane applications—if it isn't a Marion better take a hard look at the new look . . . the 1960 model Marion bridge cranes. Available in models from 15 to 75 tons lifting capacity.

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Improper training can ruin a conveyor belt faster than any other abuse. Riding up and rubbing against a frame member soon wears away the stiff edge of conventional belting and exposes the carcass plies to moisture, mildew, dirt and eventual ply separation. "Coledge" belt construction was developed by Thermoid Division—to overcome this weakness and extend belt life.

"Coledge" construction puts plenty of extra rubber on the edges where it counts most . . . the plies are stepped back to make a more flexible edge that rides with the punches when misalignment occurs. This

"Coledge" construction can put many extra miles on your system, especially in coal fields and sand and gravel pits where most belt failures are the result of excessive edge wear. Exclusive with Thermoid Division, "Coledge" construction is available in any standard type belt your application may require.

So, if you have an edge-wear problem with conveyor belts, specify "Coledge" construction. See your Thermoid Division industrial distributor for technical data or assistance, or write *Thermoid Division, H. K. Porter Company, Inc., 200 Whitehead Road, Trenton 6, New Jersey.*

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**WATERING**—A 3,000-gal capacity tank drawn by a Mack tractor supplies water. Soil is a mixture of sand and loam with some gravel.

**COMPACTING**—An International TD-24 tractor pulls a Ferguson RT-100-S 50-ton compactor. The job specifications call for compaction to a Proctor density of 100%.



## BIG FLEET LEVELS SLOPE . . . *continued*

D8's and one D9 for push dozers.

The scrapers average a 5-min cycle on a 3,000-ft round trip. They are aided by downhill loading conditions and excellent haul roads for the uphill return.

### The Job Layout

At the start of the earthmoving operation, Zara divided the 154-ft-wide roadbed in half. One side serves as a haul road, the other side as the cut and fill. Whenever the cut gets about 6 ft below the haul road, the earthmovers switch sides. A Cat No. 14 grader patrols the haul road at all times, keeping it in good condition.

All scrapers move off the haul road and into the cut in the same direction. When a scraper hits pay dirt, a pusher is ready and waiting. Once the scraper is kicked out, the pusher backtracks 50 to 75 ft to pick up the next scraper. Since all loading is downhill, tandem pushing isn't necessary.

Job specifications call for compaction to a Proctor density of 100%. To meet these requirements, Zara has a Ferguson 50-ton compactor, a Michigan 380 dozer, and a Cat No. 12 grader working in the fill. Water is supplied by a 3,000-gal capacity tank truck. And a D7 maintains embankments on a 2:1 slope.

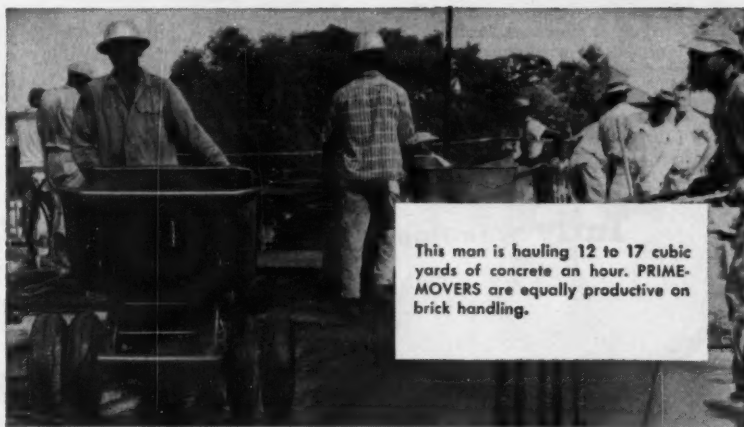
### Men on the Job

Ed VerEecke is construction superintendent for Zara. Dan Winnike is resident engineer for the New York State Dept. of Public Works.

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## NOW IT'S **16** PRIME-MOVERS



This man is hauling 12 to 17 cubic yards of concrete an hour. PRIME-MOVERS are equally productive on brick handling.

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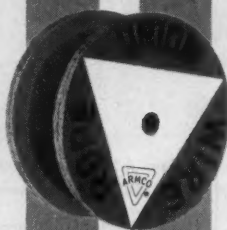
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With hundreds of selected distributors surrounding a hard core of 15 strategically located and expertly staffed branch offices and warehouses Union is uniquely organized for quick rescue service.

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Customers tell us that Union's preventive service, coupled with quality so good it makes Union the ultimate low cost rope,

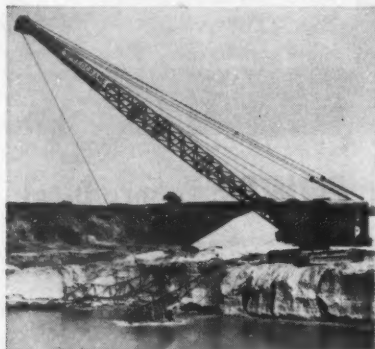
is helping substantially to battle against rising operating costs. Here's how customers have benefited in other ways from Union's years of preventive service.

Union engineers sometimes found it impossible to select exactly the right rope from 1600 standard constructions in day to day production. To correct these situations Union laboratory researchers and engineers developed the Tuffy family of special purpose wire ropes and slings. Tuffys are engineered for equipment which imposes extraordinary tough jobs upon wire rope. Each Tuffy is a special construction but in all of them is a balance of strength, toughness and flexibility tailored for longer service life.

Tens of thousands of applications have proved Tuffys to be the ultimate low cost wire rope or slings.



## Tuffy Wire Ropes and Slings are "Job Prescribed" for Tough Jobs



**Tuffy Balanced  
Dragline Rope**



**Tuffy Balanced  
Scraper Rope**



**Tuffy Balanced  
Dozer Rope**





Helicopters, long noted for their disaster missions, are becoming "work horses" in the air. Equipped with wire rope and slings they pick up and set materials and machinery down in inaccessible places and carry heavy loads to otherwise hard-to-get-to places. Photo courtesy Bell Helicopter Corporation, Ft. Worth, Texas.



## Tuffy Balanced Slings and Hoist Lines



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## Tuffy Wire Rope Tips



Money-Saving Ideas on the Use and Care of Wire Rope

### How to Check Groove Diameter



Not Quite



Just Right

Groove diameter of a sheave or drum must never be less than the actual caliper diameter of the new rope. When a new rope is installed on old equipment, use a reliable groove gauge to make sure the tread or bearing surface of all sheaves is of sufficient size to avoid pinching the rope.

### Recommended Sizes

Diameter of Rope	Min. Dia.	Max. Dia.
$\frac{3}{4}$ - $1\frac{1}{8}$	+ $\frac{1}{64}$ "	+ $\frac{1}{32}$ "
$1\frac{1}{8}$ - $1\frac{1}{2}$	+ $\frac{1}{32}$ "	+ $\frac{1}{16}$ "
$1\frac{1}{2}$ - $2$	+ $\frac{1}{16}$ "	+ $\frac{1}{8}$ "
$2$ - $2\frac{1}{2}$	+ $\frac{1}{8}$ "	+ $\frac{1}{4}$ "
2" and larger	+ $\frac{1}{4}$ "	+ $\frac{1}{2}$ "



New ropes are usually oversize. It is advisable to have groove diameters of sheaves or drums as large as the actual caliper diameter of the new rope, or slightly larger.

### Use the Right Fittings

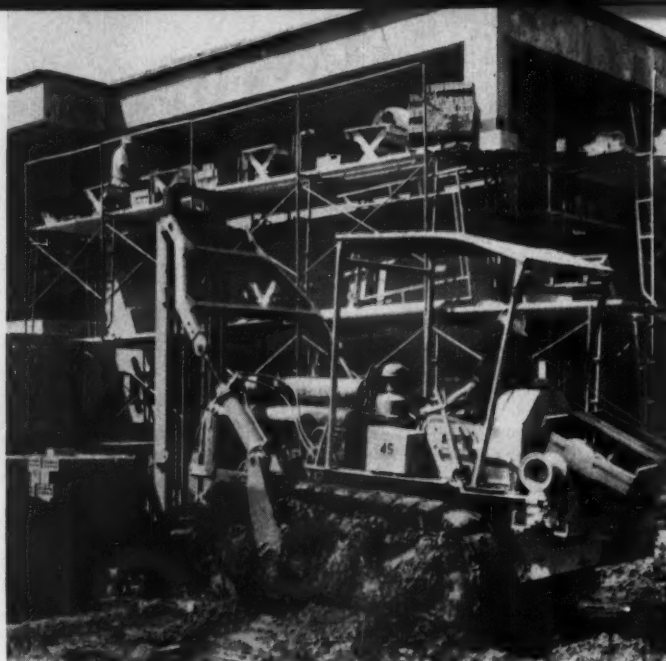


Right fittings add life expectancy to wire rope. Fittings which derive holding power from crimping action are harmful. Shown here is a clamp that has no "wrong side"—can be put on either way. It snugly saddles the rope, grips larger surfaces in such a way that loads are carried almost entirely by friction instead of crimping action. Combined in its two parts is a thimble. The parts are interlocked to prevent collapse of the thimble, and eliminate all shear on the bolts.

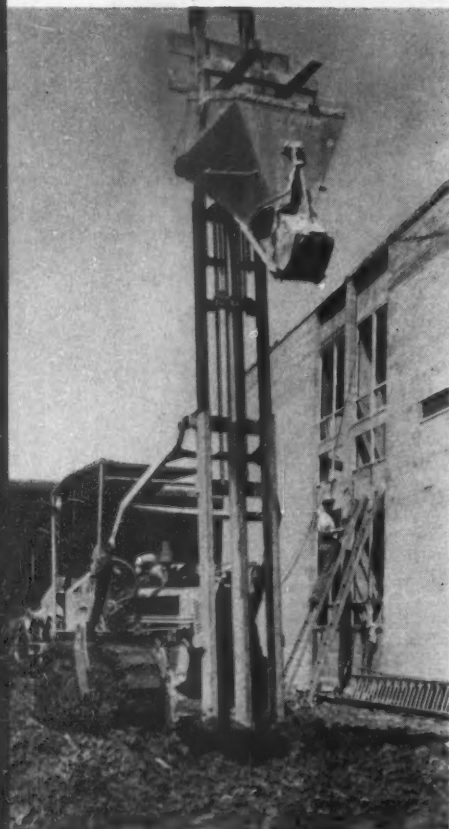
Would you like a copy of a booklet in which more than a score of Tuffy Tips like these above are reproduced. If so, write Union Wire Rope Corporation, 2270 Manchester Ave., Kansas City 26, Missouri.



Unloading materials, stocking scaffolds for bricklayers, placing forms, and pouring concrete are all in a day's work of a crawler-mounted fork lift that moves in mud or on uneven ground with ease.



## Fork Lift Rides on a Crawler



**CONCRETE POURING** — Rig's 21½-ft-high mast raises ⅝-yd concrete hopper to second floor height for pouring concrete. Forks are mounted on a Cat D4.

A FORK LIFT that can go almost anywhere is the result of adding a mast and lifting forks to a modified crawler tractor. The combination rig is handy for materials handling on rough ground and on muddy building sites.

One such crawler-mounted fork lift is working on a \$1.5-million school construction job in Oak Park, Mich. The general contractor, Darin & Armstrong of Detroit, is erecting a five-building addition to a high school there.

### Modified D4

Basic component of Darin & Armstrong's rig is a Caterpillar D4 tractor. It was modified to handle a Gladden Haas 21½-ft fork lift attachment. The machine can lift 4,000 lb up to 10 ft and 1,800 lb to its maximum height.

On the job, the D4 with fork lift unloads palletized cinder and concrete blocks and bricks and stockpiles them. Later it stocks scaffolds for the bricklayers. The rig also lifts and moves scaffolds, stacks lumber, and unloads reinforcing steel. When necessary, it lifts a ⅝-yd hopper to second floor height for pouring concrete columns.

Job superintendent W. J. Milroy was especially happy with the fork lift in the winter and early spring. Men and machines had turned the frost and snow into 18 in. of mud, but the go-

anywhere fork lift was able to keep bricklaying operations functioning at a normal pace.

Conversion work on the D4 was done by Michigan Tractor & Machinery Co. of Detroit. It was their sixth such modification job for the area's contractors. Here's what they did:

The tractor was converted from oscillating to a non-oscillating type. A rigid box frame was bolted to the track roller frames and to the front of the engine. Then mechanics removed a small hold-down spring and inserted an 8-in. box channel under the main spring. These changes provide a rigid, four-point base when lifting.

### Hydraulic Changes

Next they went to work on the hydraulic control. The original Caterpillar No. 44 hydraulic control is a single-valve unit designed for one-way operation of the hoist lift cylinder. Mechanics drilled a return port in the control converting it into a double-valve unit for lowering the forks. To match the bigger control, they lengthened the hydraulic tank increasing its capacity.

In addition, the bulldozer trunnions were reversed and moved forward on the track roller frame. And an A-frame was fabricated to connect the cylinders to the mast.

# BRINGS COMPRESSED AIR ANYWHERE UNDER ITS OWN POWER!



Here's a self-propelled air compressor that eliminates *all* the dead time spent by conventional compressors waiting to be towed somewhere! The Tractair is a 42-hp tractor and a 125-cfm air compressor. It brings air power to sites you'd fear to tread with truck-towed compressors. You can park it in a ditch or on a steep slope, attach the hose, and start drilling. When finished, the operator drives it to the next job — without waiting for a tow truck or men to jockey it into position. You can drive up close to the work, too, which means shorter hose... less hose damage... and full 125 cfm power at the tool.

The improved Tractair offers greater efficiency and fuel economy. It's designed for operator convenience... all-weather dependability... and the easiest servicing in the field. Add available attachments and you have a money-saving self-propelled air-plant for year-around construction and maintenance work.

Ask your Le Roi distributor for a free demonstration. Or write to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.

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T-61

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

Circle 99 on Reader Service Card



***Thru these gates  
passes the  
best dam\* concrete  
in the world!***

On more than 80% of all dam projects in the past 10 years, Gar-Bro's big heavy duty concrete buckets have been used. This is also true about most smaller concrete construction jobs where Gar-Bro Concrete Buckets are preferred by contractors. That's why we can say, "The best dam\* concrete and the most concrete passes thru the grout-tight, self-closing, non-jamming double clamshell gates of Gar-Bro Concrete Buckets."

Only Gar-Bro offers you patented double clamshell gates, patented accordion hopper attachments, suspended steel sub-hopper attachments with Elephant Trunk or Steel Drop Chutes. Yes, and only Gar-Bro Buckets are equipped with fittings for easy attachment of these important accessories. No wonder contractors everywhere prefer Gar-Bro Concrete Buckets.

See your local Gar-Bro dealer or write for catalog which illustrates and describes more than 300 items for handling and placing concrete.

Gar-Bro Mfg. Co., Los Angeles, Calif.—Peoria, Ill.

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\*Concrete for dams, bridges, buildings and all construction projects.

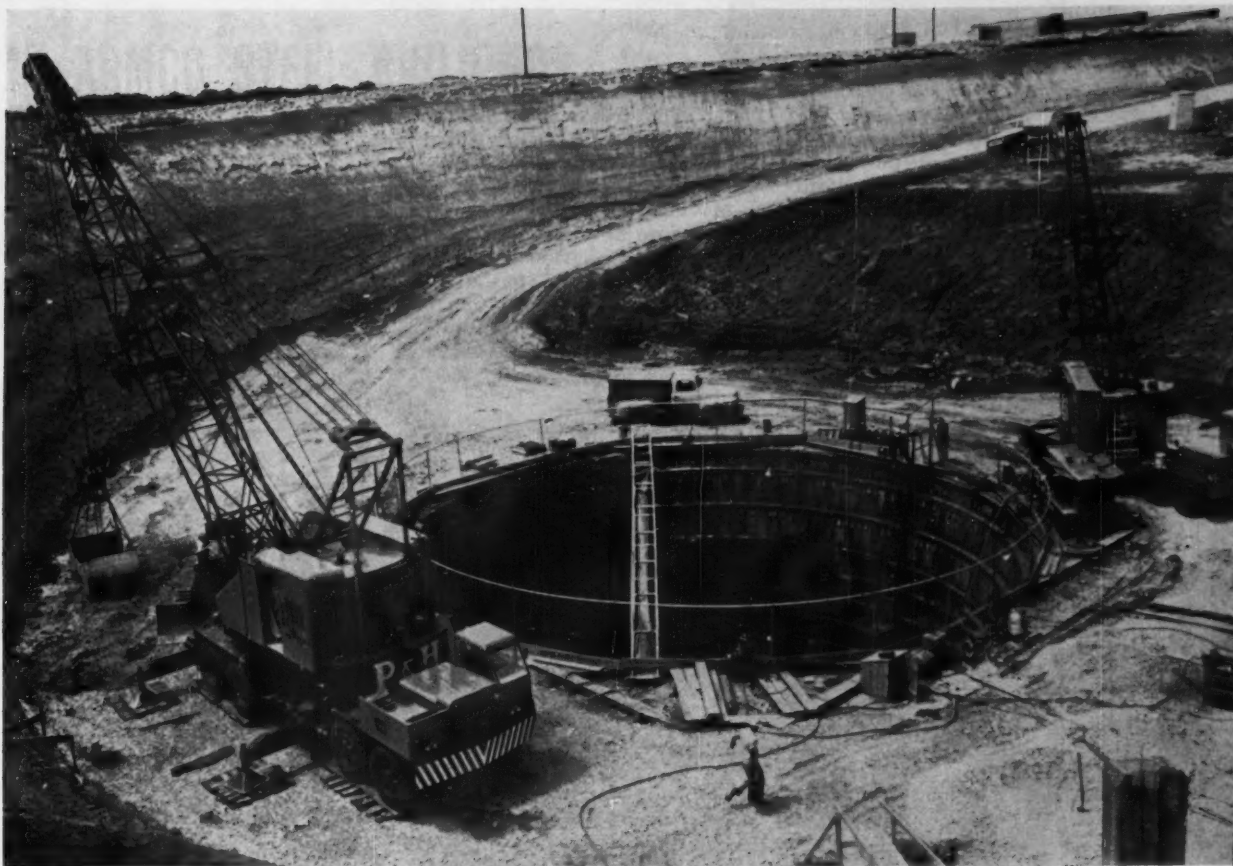
# GAR-BRO Buckets

**The World's Most Complete Line  
of Concrete Handling Equipment**



5 types  
29 models  
capacity  $\frac{1}{3}$  to  
8 cubic yards





**SINGLE SILO**—Full equipment spread works at each of 12 widely dispersed Atlas missile silos at Lincoln base. Most bases group silos in threes.

## Sprawling ICBM Job Requires Extra Equipment

MISSILE BASE construction is a booming business, but it has more than its share of problems — all-but-impossible deadlines, frustratingly tight tolerances, and change orders that come in so fast that it is difficult to keep track of them, let alone make the changes.

Now there's a new problem—extreme dispersal of the work areas. An Atlas base, now under construction at Lincoln, Neb., (and a similar base at Salina, Kan.) are the first "hardened" bases to require that the launchers be dispersed singly. At all other ICBM bases, the launchers are grouped in threes.

The \$23-million Lincoln contract, held by Western Contracting Corp. of Sioux City, Iowa, is

just about as sprawled-out a job as you can imagine. The 12 launchers ring Lincoln in an 80-mi dia circle, enclosing an area about the size of the State of Connecticut.

The one-year completion deadline, one of the toughest yet imposed on a missile project, means that Western has to work on all the launchers at once. This adds up to a tremendous problem in logistics. Western controls its huge fleet of equipment on the job with extra supervisory personnel who make full use of radio, telephones, and a helicopter purchased specially for this job.

### Equipment Saturation

Western has flooded the project with equipment. Except for the

initial earthmoving phases, they put a separate spread at each of the 12 sites. Project Manager Mason F. Travis estimates that 25% more equipment is needed on this job than for a base where the launchers are grouped in threes.

Excavation is a combination of open cut and vertical shafting. The open cut is an egg-shaped hole 400 ft long and about 60 ft deep. The shaft for the launching silo is started from this excavation.

Western was able to handle the 12 open cuts with three spreads while they were organizing and assembling equipment for the shafting operation. Each spread consisted of three 24-yd tractor-drawn scrapers and six Cat D9's.

*continued on next page*

At each of the 12 sites, the shafting operation requires the following equipment: a 3-yd crawler crane, a 30-ton truck crane, a 2½-yd Traxcavator with hydraulic ripper, two 10-yd tandem trucks for muck removal, and the usual collection of pumps, compressors, and service trucks.

A central equipment reserve contains standby units that can replace any piece that breaks down. For example, there are 14 truck cranes on hand although only 12 are in use at any one time.

Travis estimates that concrete costs will be 50% higher than they would be for a three-missile layout, because of the extra plant

required. Western is using a combination of three existing plants in the area, three stationary plants they have set up themselves, and three portable plants.

Moving equipment is a major job because Nebraska rigidly enforces its load limit laws and has refused permission for excess loads on this job. It would take too long to break down and re-assemble major equipment to make legal-sized loads. Instead, Western moves equipment intact over circuitous back-county dirt roads, even though they have to shore bridges, move mail boxes, and prune overhanging trees along the routes.

### Administration

On a complex job like a missile base, close supervision is essential. But at Lincoln it's especially hard to achieve. Just keeping in touch physically is a major chore. An auto tour of the 12 work areas would mean a 425-mi drive.

At the beginning of the job, Western supervisors tried to get around by car. They found they were spending most of their time on the road. So Western purchased a three-passenger Model 47G-2 Trooper helicopter made by Bell Helicopter Co. of Fort Worth, Tex. The helicopter cut travel time by two thirds.

"A man flying in a helicopter can visit eight sites in a single day," says Travis. "Of the 10 hr he is away from the office, he spends only 2½ hr in transit. We expect the helicopter to pay for itself in a year."

Western is so satisfied with the helicopter that they recently bought another—this time a four-passenger Bell 47F Ranger.

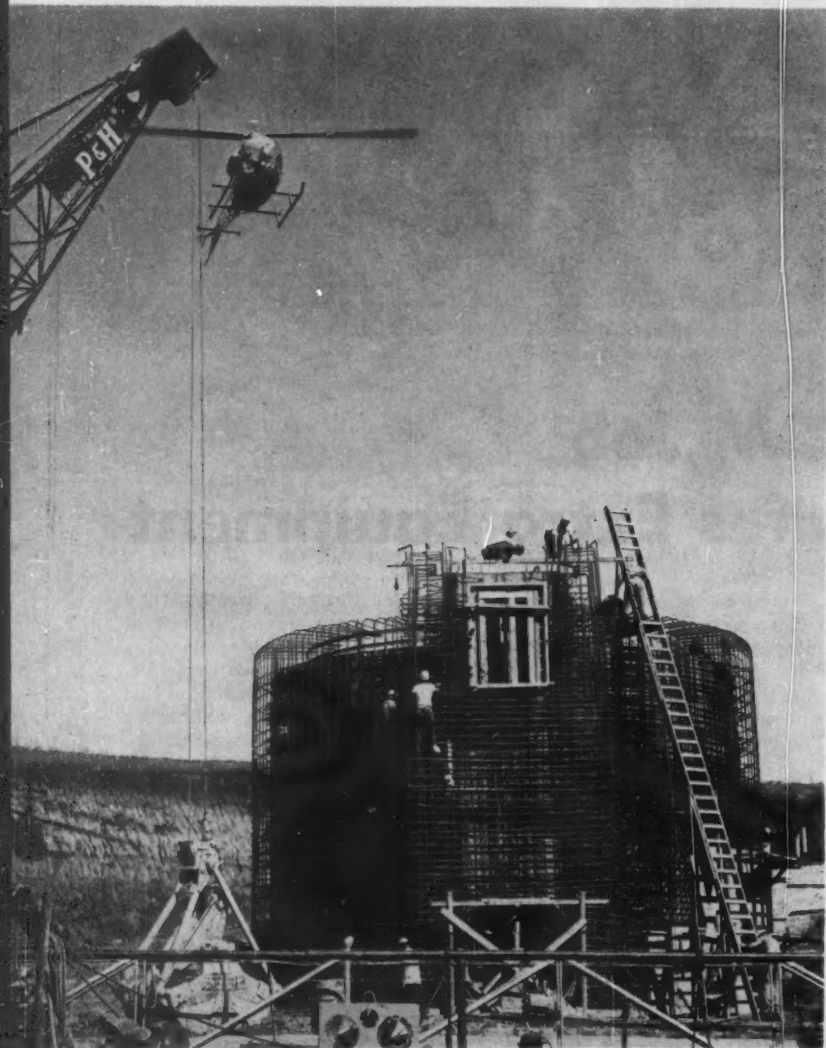
Helicopter maintenance is handled at night at Lincoln's Union Airport. Weather prevented flying only once last summer. "It takes almost zero visibility to ground the G-2," says Billy Keller, Western's pilot.

The field organization requires more supervisory personnel. In addition to the regular engineering staff at headquarters, there are staff consultants for each specialized phase of the work.

Field supervision is handled by area superintendents, each covering two or three sites. Under them is a roving crew of craft superintendents. These specialists move from site to site, wherever their type of work is required, and are in direct charge of their phase of the construction.

To keep tight control of subcontracts, Western requires that subcontractors do their own work and not sub the work further. Subcontractors also have to maintain a man at Western's headquarters to help standardize instructions and drawings for all the sites. This alone, according to Travis, represents a considerable saving in administrative costs.

The Omaha District of the Corps of Engineers, under Col. Harry G. Woodbury, Jr., is supervising construction. Lt. Col. Hal Schroeder is area engineer.



**AIRBORNE SUPERVISION**—Helicopter carrying project manager prepares to land at one of the job sites. Helicopter has cut travel time for supervisors by two thirds.

# 17 ARMCO STEEL BUILDINGS SERVE CONTRACTORS AT THE NIAGARA POWER PROJECT



Artist's sketch of completed Niagara Power Plant

New steels are  
born at  
Armco



Main Office Building



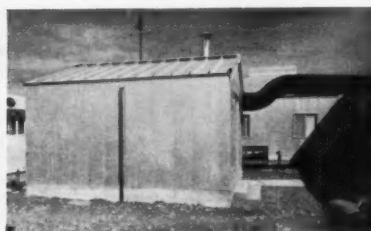
Maintenance Shop



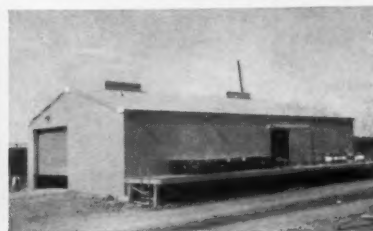
Turbine Parts Warehouse



Shop and Warehouse



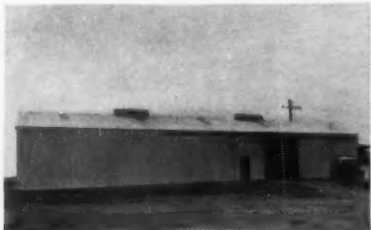
Heating Plant House



Oil and Grease Storage



Compressor House



Tire Service Building



Railroad Maintenance Shop

Armco Steel Buildings, ranging in size from 12 by 16 feet to 100 by 300 feet and totalling 182,486 square feet, serve contractor needs at the gigantic Niagara Power Project of the Power Authority of the State of New York. Some of these are pictured here.

While these are job-site installations, contractors also utilize Armco Steel Buildings for their own permanent offices, shops, and warehouses. Low initial cost is an important factor, but these buildings are also preferred for their appearance and high quality.

Armco Buildings are available in clear-span widths from 5'4" to 100'—with unlimited lengths. For complete information, write for our new 36-page booklet. Armco Drainage & Metal Products, Inc., 6080 Curtis Street, Middletown, Ohio.

## ARMCO DRAINAGE & METAL PRODUCTS



*Subsidiary of* **ARMCO STEEL CORPORATION**

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## Three weeks lost to bad weather, but Stuart, Inc. **GULF MAKES THINGS**

This Maryland road project calls for the removal of 1,750,000 cubic yards of rock and earth—including 200,000 yards of blasted rock, and 500,000 yards of rooted material.

It's a 7½-mile section of Maryland Route 97—a feeder route to Washington, D.C. And in spite of three weeks of weather delays, J. O. & C. M. Stuart, Inc., is keeping pace.

"Staying on schedule when you can't control the elements is no accident," says Henry M. Scott, General Superintendent. "You do it with the elements that can

be controlled—your equipment!"

Mr. Scott started this control with an effective preventive maintenance program: oil changes every 120 hours, grease jobs each 10-hour day, and air cleaners changed daily.

The company's selection of a crankcase oil shows further attention to equipment performance. The choice: Gulf® Super-Duty Motor Oil. Mr. Scott tells why, "Our spread includes scrapers, tractor dozers, crawler tractors, motor graders, a dragline, and two 50-ton rubber-tired compactors. And with only one oil for all equip-



To keep them rolling, these two trucks service units on the job. One truck stocks Gulf diesel fuel in an 8,000-gallon storage tank. The other truck carries Gulf lubes.



Conference. C. M. Stuart, left, Vice President, Henry Scott, center, General Superintendent, and N. K. Arch, Gulf Sales Engineer. Gulf products have helped keep project on schedule—in spite of poor weather.

stays on schedule . . .

## RUN BETTER!

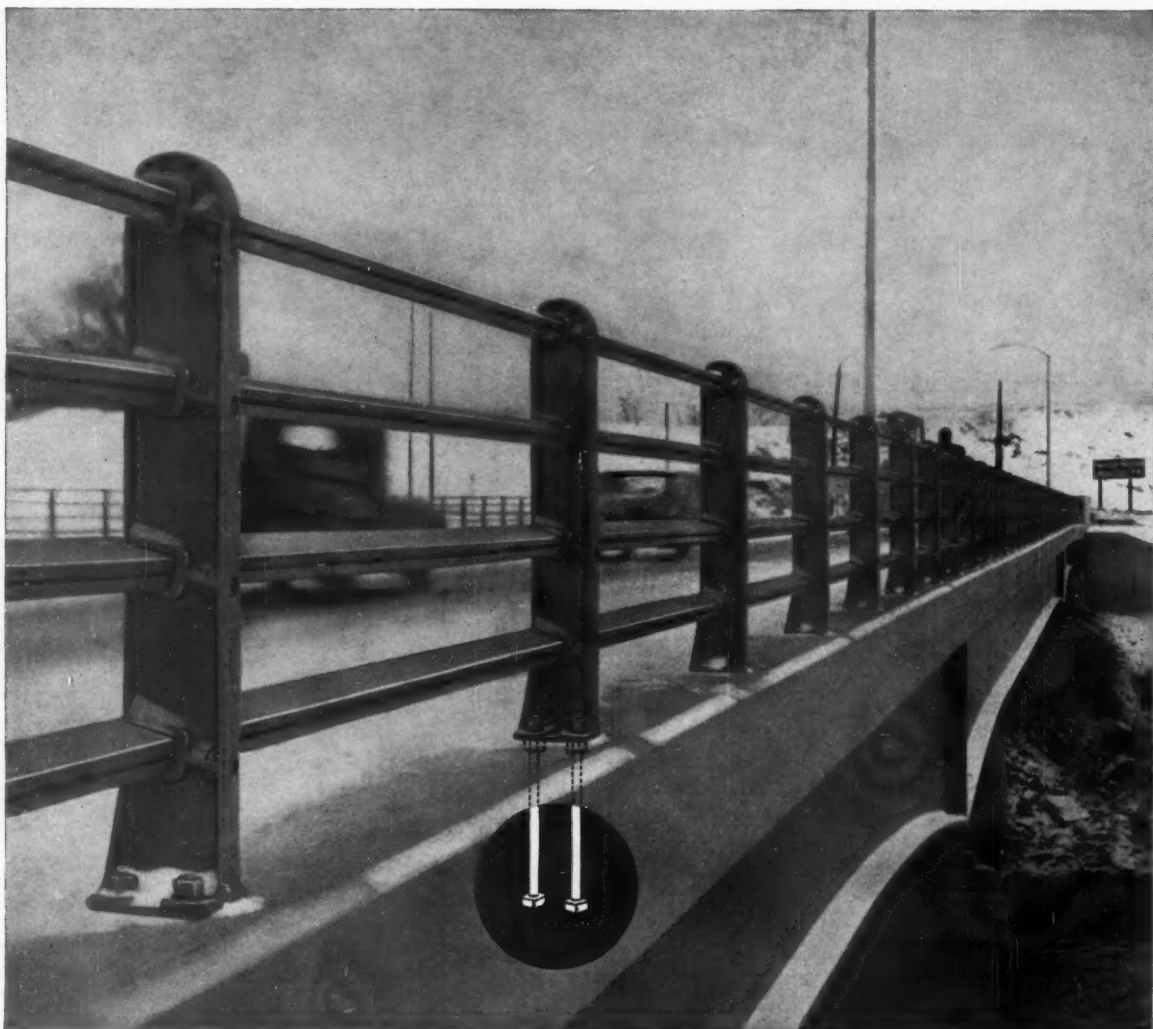
ment, the wrong oil won't get into crankcases and cause trouble at a later date."

In addition, Stuart switched to Gulf® diesel fuel and wiped out the problem of heavy sulphur deposits on pistons and rings. Finally, one grease is used for all units—Gulflex® A. In sum: Gulf products hold downtime to a minimum, keep equipment on the job.

Try Gulf fuels and lubricants on your next project. And you'll find out why Gulf makes things run better! For more information call your nearest Gulf office. Or, write us.

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# Warning:

## BRIDGE RAIL IS ONLY AS STRONG AS ITS ANCHOR BOLTS!



For strength  
... economy  
... versatility

When anchoring fasteners are not large enough, the strength of bridge rail is seriously weakened. Failure can result. Make sure you're using anchor bolts of sufficient size and strength.

### Here's how to choose the correct size of bolt:

For Bethlehem Perfect Vision Bridge Rail—1 or 2 rail posts—use galvanized 1-in. anchor bolts.

For Bethlehem Perfect Vision Bridge Rail—3 or 4 rail posts—use galvanized 1 1/4-in. anchor bolts.

Another important benefit from using anchor bolts of the right size and quality is the elimination of the need for concrete replacement. Inadequate anchor bolts tend to shear off under heavy impact. When this happens, it's costly to remove and reset the concrete base.

Strong Bethlehem anchor bolts are made specially for use with Bethlehem Perfect Vision Bridge Rail. Avoid weak or brittle bolts. Order to ASTM Specification A-307.

The nearest Bethlehem sales office can help you in selecting the right bridge rail and the right anchor bolts.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

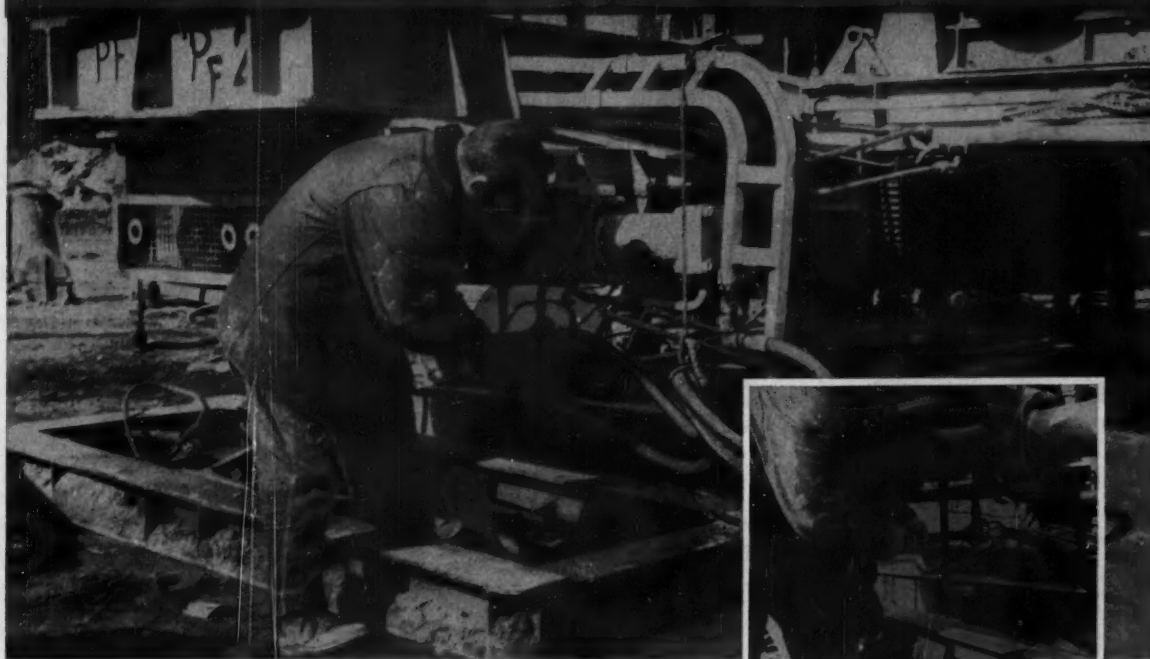
# BETHLEHEM STEEL





walking pile driver has up to 8000 psi  
peak hydraulic pressures handled by  
**Aeroquip Very High Pressure Hose**

from job report, Franki Foundation Co., Boston, Mass.



*Aeroquip helps keep equipment on the job.*

Hydraulic pressure is the key to walking Franki's 70-ton rig onto a foundation job. Frequently, the hydraulic pressure hits 7000 to 8000 psi—only the best hose can take this kind of punishment. Aeroquip 1508 Spiral Wrap Reinforced Hose is meeting this extreme test without break or trace of leak. The pictures show a Franki rig on one of the 140 caissons required for a new department store at the New England Shopping Center, Saugus, Mass. Franki is also using Aeroquip Low Pressure

Hose for air lines on his construction equipment.

Our files of job reports like this show you are in good hands when you consult with Aeroquip. You'll find details about the right kind of Aeroquip Hose and Reusable Fittings for your particular applications in Catalog 204. Your Aeroquip distributor, a fluid line specialist, will give you a copy. He'll discuss, without obligation, various applications that might be helpful to you. His number is in the "Yellow Pages" under "Hose."



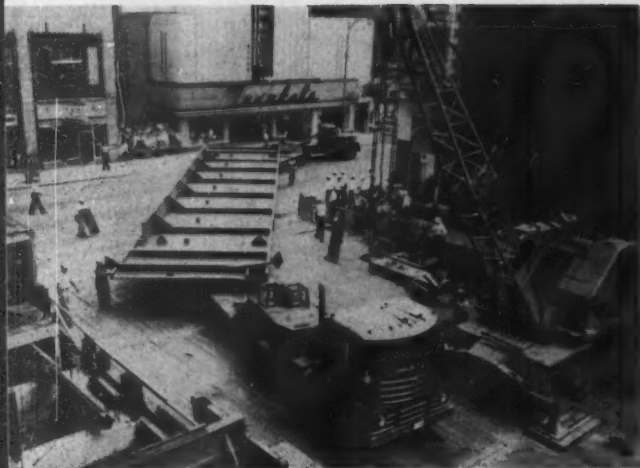
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*Aeroquip is so easy to use—inventory's just a few feet of hose and a handful of fittings.*



**ARRIVAL**—Two lowboys bring plate girder to job site.

*Erecting an "upside-down" building takes as much imagination as designing one. Here's how a contractor coped with a design that called for bolting a 98-ton box girder to the top of two elevator towers and then suspending the floor beams from it.*



## Lift-Slab Jacks Tackle a Steel

HYDRAULIC JACKS designed for lift-slab construction have shown their versatility by successfully handling a steel erection job. The jacks hoisted a 16x84-ft, 98-ton box girder to a height of 91 ft for an unusual "upside-down" building in Des Moines. After the girder was erected, principal beams for the intermediate floors of the five-story structure were suspended from it.

Joint venture contractors Weitz Co., Inc., and Ringland-Johnson, Inc., both of Des Moines, adopted the lift-slab method for the construction of a \$1.7-million new bank building being erected on

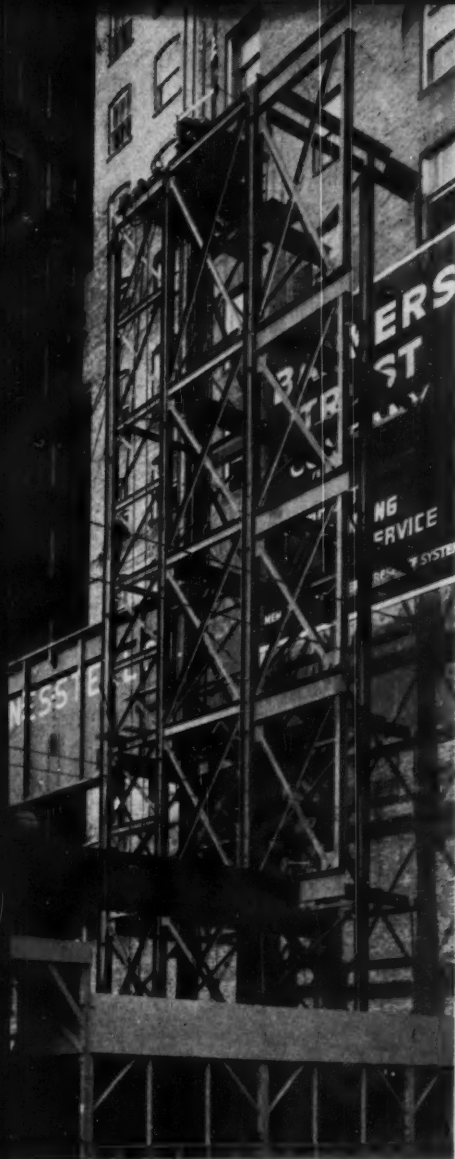
the same site as the old banking facilities that were razed. They estimate that it would have cost \$5,000 to raise the box girder with an A-frame and tackle. With the lift jacks, the girder was hoisted into position at a total cost of \$1,200.

The "upside-down" design stemmed from three stipulations made by the owners. First, they stated that the street-level banking floor must be free of obstructing columns. Second, they forbade tampering with the bank's existing vault, a basement structure. And last, they ruled out interfering with an adjoining 12-

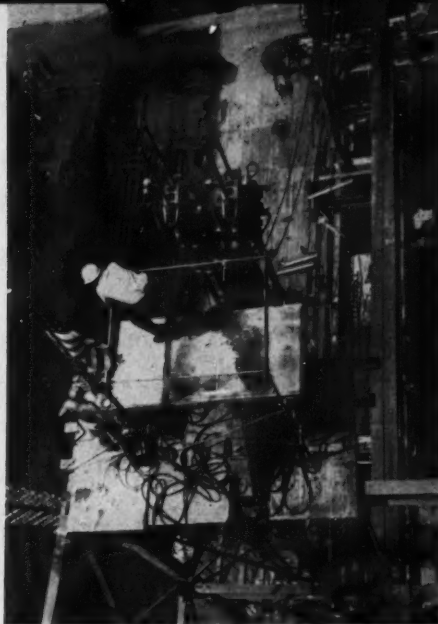
story structure into which the bank temporarily moved, and which is scheduled to be razed when the new building is completed.

### Unusual Design

To comply, the building was designed to be suspended from above rather than supported from below. The design calls for securing the box girder to the corner columns of two elevator towers located at the front and rear of the building and set-in 10 ft from the adjoining 12-story building. Steel plates suspended from the box girder carry the



**HALFWAY MARK (left)**—Lifted by jacks atop columns, box girder (arrow), made of two plate girders joined on the job, moves toward top of elevator towers.



**NERVE CENTER (above)**—Workman on upper platform keeps an eye on overall operation while the console operator on lower platform controls all jacks.

**STEEL ERECTION (below)**—A 20-ton Koehring crane begins to suspend steel framing from the girder, which is bolted to corner columns of the towers.

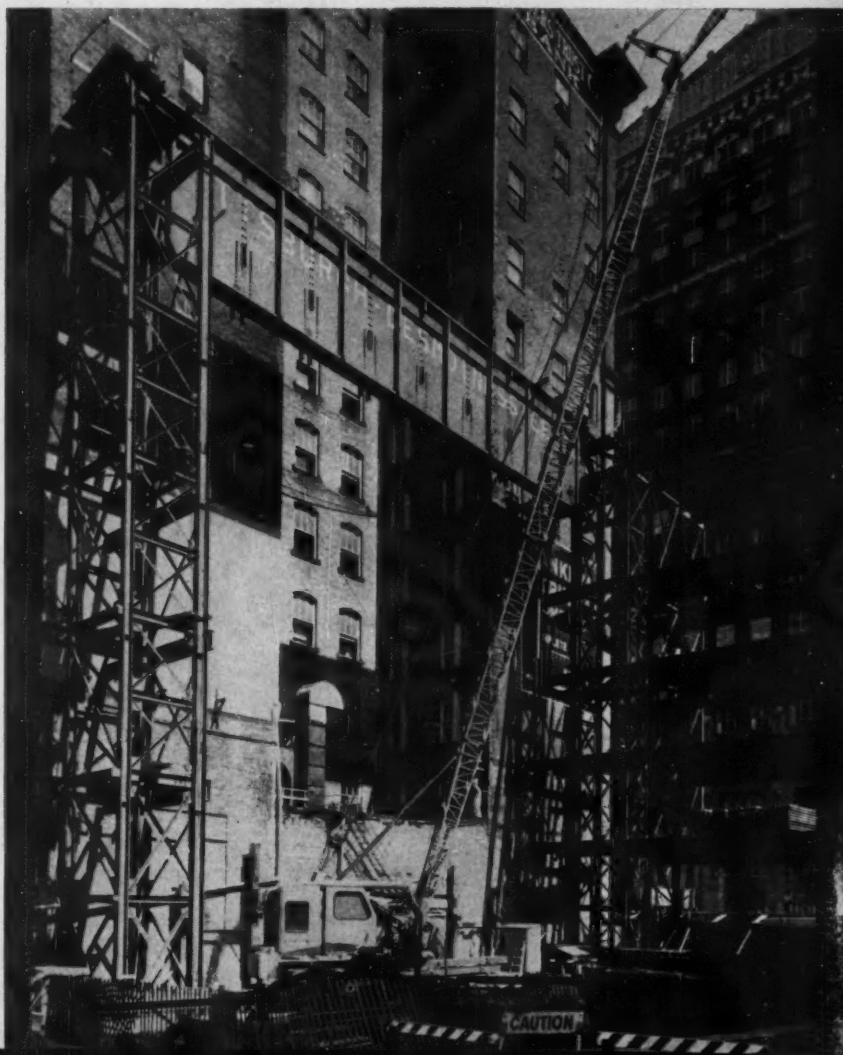
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## Erection Job

principal supporting beams for each floor.

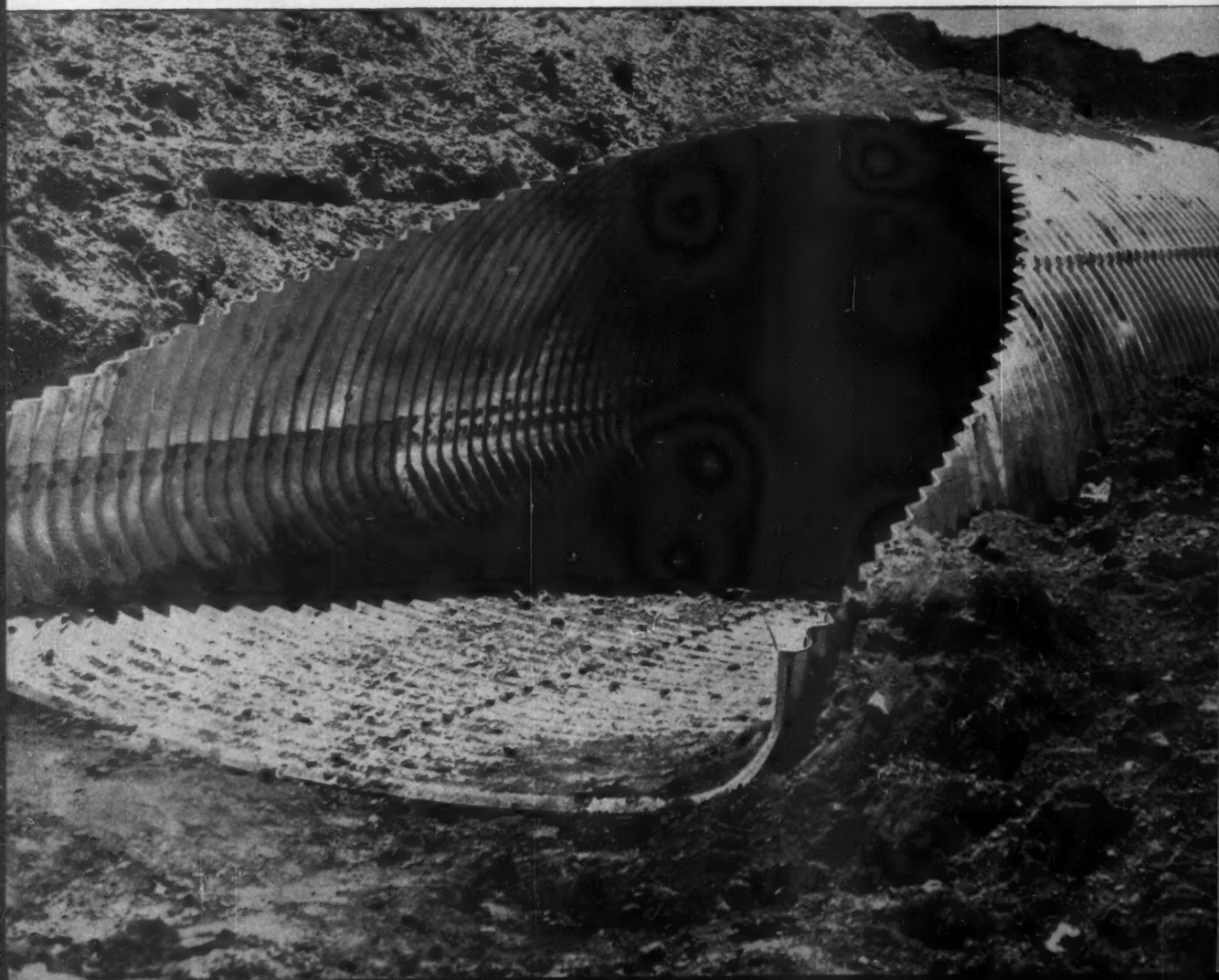
The design met all three provisions. It provided a columnless 67x80-ft ground floor. It avoided disturbing the vault with foundation construction. And, by setting the towers 10 ft in from the property line, it eliminated the need to underpin or interfere with the spread footings of the adjoining building.

While this plan pleased bank officials, it raised a raft of problems for the contractors. First, they had to transport the massive girder—the heaviest ever fabricated by Pittsburgh-Des Moines





**This pipe broke the back of a flood-crazy stream**



You're looking at a giant USS AmBridge Sectional Plate pipe-arch (12'-10" x 8'-4" x 322'-0" long) erected by the Leon Joyce Co. of Minnesota. It handles the run-off from the Bitter Creek watershed near Zumbrota, and is one of the biggest drainage structures ever installed in Minnesota.

□ After a heavy rainfall, Bitter Creek turns from a gentle, slow-moving stream into a raging torrent of destruction. Flash floods have aggravated local townsfolk and farmers for years. But in this new, wide-mouthed sectional plate structure, the water simply runs itself out. □ The huge drainage structure is one of four recently installed within a 10-mile area as part of a new four-lane highway system. The other three structures are slightly smaller. USS AmBridge Sectional Plate pipe, pipe-arches and arches are permanent. They won't crack. Won't break. And installation is faster, because there's no need for forms. Write or contact any one of our offices for information on *American Bridge Highway Products*.

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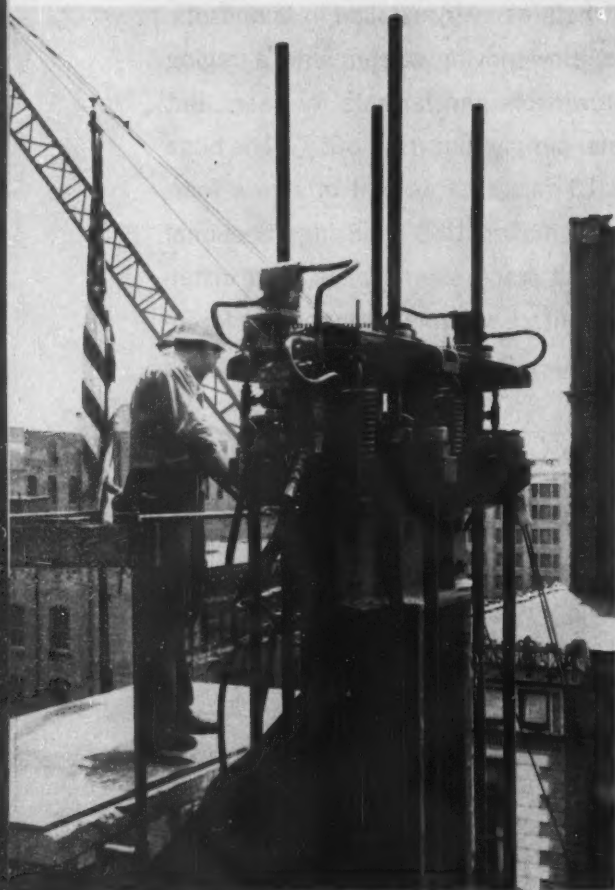
**American Bridge**  
Division of  
**United States Steel**



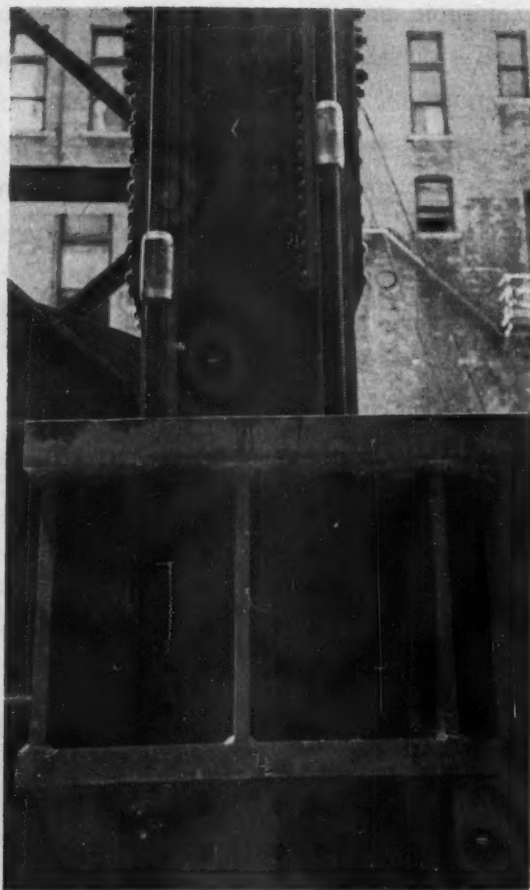
USS AmBridge Highway Beam Guard rail and Posts help safeguard traffic. This rugged, flexible steel beam guard rail is highly visible. It bolts easily but firmly to steel posts and is available in 12'6" and 25' lengths to minimize splicing.

USS AmBridge I-Beam-Lok is a sturdy, lightweight bridge flooring. It installs quickly, easily with less traffic interruptions. The filled type is available in units 5' wide and up to 40' long that apply directly to stringers on spans from 6' up to 8' centers. The open type is also available for spans up to 4' centers.





**LIFT JACKS**—Four 50-ton-capacity hydraulic jacks sit on channels that are bolted back to back and secured to the top of a column.



**LIFTING RODS**—Lifting force of jacks is transmitted to girder by 2-in.-dia rods secured under the flange and threaded through jacks.

Steel Co.—to the job site. Then they had to field-assemble, hoist, and secure it in place.

The box girder consists of two plate girders joined at the webs with 18WF50 stiffeners. Each plate girder has an 11/16-in. web almost 16 ft deep. Top flanges are 4½ in. thick and 18½ in. wide. Bottom flanges are 5x10 in. When joined side by side, there is a 9½-in. space between the inside edges of the bottom flanges to accommodate 8½-in.-wide vertical hanger plates.

#### Moving the Girder

Because of the box girder's size, the contractor decided to transport each plate girder separately and then assemble the two sections into the box on the job. Each plate girder was placed web down between two lowboys

that faced in opposite directions. While the tractor for the lead lowboy moved forward, the tractor for the rear lowboy drove the entire route in reverse. With a police escort, they covered a 1½-mi roundabout route, which included going the wrong way down a one-way street to avoid power lines.

(From an erection standpoint, it would have been ideal to transport the girder in an upright position resting on its bottom flange. But, in this position, it would have been impossible to get the girder out of the fabrication shop.)

Once the lowboys reached the job site, two Koehring 20-ton truck cranes upended the girders, then jockeyed them into position for field assembly and erection. The girder halves were connected

with diaphragms, stiffeners, and other parts brought separately to the job.

#### Reinforcing the Floor

To bear the combined load of the steel member, the lowboys, and the cranes, the ground-level floor first had to be converted to a working platform. The contractors accomplished this by finishing the basement and putting in all ground-floor framing. Then they floored the area with 2x6's laid on edge and bolted together in mats. Extra capacity was obtained by shoring the floor. The maximum load transmitted to the floor by the cranes' outriggers was in the range of 57 kips.

Once the girder was assembled, it was properly spotted and the two elevator towers were erected. The towers were reinforced with





**UP SHE GOES**—Project Superintendent Jim Kenworthy measures the upward progress of the girder during the early part of lift. Jacks hoist the member at rate of 3 ft per hr.

temporary cross-bracing, in addition to permanent bracing, to provide adequate lateral support against hoisting stresses and wind loads.

#### **Lifting Operation**

Skyhook Lift Slab Corp. of Overland Park, Kan., raised the box girder with a minimum of fuss at the rate of 3 ft per hr. They used eight hydraulic 50-ton jacks, mounting four on top of each column. The jacks were seated on channels that were bolted back to back. The channels were secured, webs vertical, to the column tops, and they cantilevered out slightly at each side.

The lifting force of the jacks was transmitted to the girder by 2-in.-dia lifting rods with Acme threads. The rods were threaded through the jacks and secured to

brackets welded under the flanges of the girder, which straddled the columns. Two rods extended down each side of the column. (Each lift-slab jack is equipped with two rods. In this case, only one rod per jack was actuated.)

The lifting rods were in 20-ft sections spliced together with sleeve connections. The only interruption in the lifting operation occurred when these sleeves reached the threads of the jacks. At each column, the sleeves were staggered in pairs so that two of them reached the jacks at the same time. When this happened, two jacks carried the weight of one end of the girder while the sleeves were removed and the rods re-threaded through the other two jacks. Any two jacks could carry the entire weight of one end of the girder.

#### **Only One Console**

All eight jacks were controlled by one console mounted on a platform at the top of one tower. They were interconnected so that one lifting stroke had to be completed by all the jacks before the next stroke could begin. This control insured that the girder would always be level. If the girder got more than 1 in. out of horizontal, an automatic device cut out the jacks at the high end until the jacks at the low end leveled the girder. The girder's position was constantly checked by instrument on the ground. Information was relayed by telephone linking the console operator with crews on the ground and at the top of the other tower.

When the lifting operation was completed, the two webs of the girder were fastened to the flanges of the columns with 200 1-in.-dia high-strength bolts at each end.

#### **Steel Erection Pattern**

Erection of the rest of the steel also followed an unusual pattern. First, the contractor suspended seven steel hanger assemblies from the box girder. Each assembly consists of two 8½-in.-wide steel plates separated by 14WF30 beams. The plates hang down 55 ft below the girder.

Floor beams run in an uninterrupted span from the columns for one exterior side wall of the building, through the hangers, and then cantilever 10 ft farther to the opposite exterior wall. These beams were hung from the top down with a complete 10-ft bay the entire width of the building being set at one time. Thus, the steel was not topped out, but, so to speak, bottomed out to complete the framing.

The building, scheduled for completion in July 1961, will be occupied by the Bankers Trust Co., the owners. Jim Kenworthy is construction superintendent for the general contractor. William Shull is superintendent for Skyhook Lift Slab Corp. The building was designed by the architectural and engineering firm of Brooks-Borg of Des Moines.



## DON'T WAIT FOR SMOKE SIGNALS!

Smoke signals from an engine are signs of excessive engine wear and poor engine performance... signs it's too late for effective preventive maintenance! Modern engines demand top filter protection. And Fram Filters keep engines running clean... prevent excessive engine wear and keep fuel consumption to a mini-

mum! No wonder more manufacturers install Fram Filters as original equipment than any other filter! When it comes to preventive maintenance, remember—Fram Filters give you the most advanced filter protection available today! Fram Corporation, Providence 16, R.I., GENEVA 4-7000.

*YOUR FIRST LINE OF ENGINE PROTECTION*





**CUT AND FILL**—Earthmoving equipment hops from hill to hill as spread moves from one end of job to the other. Mobile rigs refuel and service machines right on the job.

## Work in Cycles Pushes Road Through Hills

A SINGLE SPREAD of equipment is tackling all of the earthmoving on two Interstate highway contracts in Kentucky. The contracts comprise 9 mi of Interstate 75 about halfway between Cincinnati and Lexington, Ky.

Ralph Myers Contracting Corp. of Salem, Ind., holds the two contracts totalling \$5½ million. The contractor has been on the job since the spring of '59 and plans to complete the operations by this December. Myers has been working on both contracts as though they were a single job.

All earthmoving operations run in cycles. The 9-mi. stretch of highway runs through the rolling countryside of northern Kentucky, and the earthmoving involves the cutting away of a couple of dozen hills and dumping the dirt into as many valleys adjacent to the hills. As the crews finish a cut through one hill, they move on to the next one and fill in the next valley.

Because of this terrain, none of the haul distances is very long. Myers' crews never have to haul the dirt any farther than the valley adjacent to the hill they're cutting through. But by the time both contracts are completed, they will have moved approximately 5½ million yd of dirt, about half of it rock.

And it's the rock that gave both the contractor and the state engineers some trouble. Correctly estimating the amount of rock in an area is a tough enough job, and

the limestone in this region is especially troublesome because it tends to swell considerably when excavated.

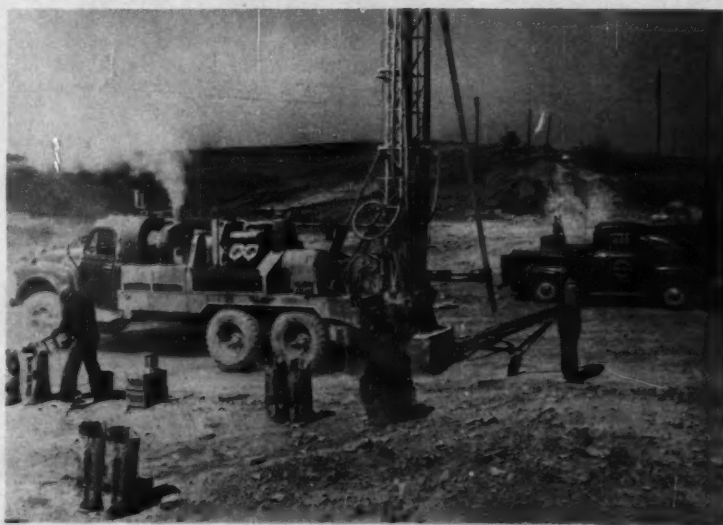
### Too Much Rock

Putting their past experience to work, the state engineers had allowed for about an 8% expansion of the rock. Accordingly, the estimate on the first Myers contract called for about 138,000 yd of borrow. This was to be selected dirt for use as a cushion on top of

the rock fill. On the second contract the borrow was estimated at about 90,000 yd.

But the actual figures didn't quite match the estimated ones. The rock expanded considerably more than anticipated, and it turned out that material had to be wasted on both contracts. On the first contract Myers ended up with only about 60,000 yd of waste, but on the second contract this amounted to 250,000 yd.

*continued on next page*



**TOUGH CUT**—Subcontractor's crew with truck-mounted Davey rotary air blast drill goes to work after scrapers have removed all loose dirt.



## KENTUCKY ROAD...

continued

Fortunately, it wasn't much of a problem to get rid of this dirt. On the first contract Myers simply dumped it on some state property adjacent to the right-of-way and built what amounted to an artificial hill.

On the second contract better use was made of the waste material. A lot of it was dumped in the valleys between opposing roadways—in some places the distance between opposing traffic lanes is well over 100 yd. Some of the rock was used to fill in gullies, ravines, and other low spots on land adjacent to the right-of-way. This not only improved the appearance of the road, but it pleased most of the property owners along the highway because it improved their land as well as the contractor's public relations. In another place a parking turnout for picnicking was built in a valley.

### Short Hauls

Regardless of how the rock was disposed of, it posed little problem



**IN THE CUT**—Two 2½-yd shovels load shot rock into Euclid dump trucks that haul it a short distance to the fill area in the adjacent valley.

to the contractor. The haul distances generally were shorter than those from cut to fill along the right-of-way, and no additions to Myers' earthmoving fleet were needed to handle the extra work.

Before moving any of the dirt, Myers put a half dozen Cat D8's and D9's to work clearing the areas along the roadways for the entire length of the contracts. The

dozers also levelled some of the steeper slopes so scrapers and trucks could travel easily once the earthmoving was underway.

After the land was cleared, the actual excavation and moving got underway. The crews started at one end of the job and gradually are working their way south going from cut to cut and filling in the valleys as they go along.

First the scrapers skim off as

## NEW STOW portable space heater... with the built-in room thermostat

• Insures constant temperature

• Plus fuel savings up to 30%

### Model #S100

Powerful fan blows 600 cu. ft. of air per minute.

Fuel filter—removes smallest dirt particles.

Heavy gauge steel, electrically welded gas tank. Strong, lightweight.

Running time—12 hours, plus up to 25% on each tankful (depends on outside temperature).

Combustion chamber enclosed  
• No exposed flame  
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Burns Kerosene or No. 1 or No. 2 fuel oil.

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Set at desired temperature—Built-in Room Thermostat maintains constant room temperature, saves on fuel and increases running time on one tankful of fuel up to 30%.

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**Drill Steel Bores Deep in Alabama Marble.** You're looking at one of the quarries of Moretti-Harrah Marble Company, Sylacauga, Ala., where blocks of gleaming white marble are wrenched from the earth's grasp by means of broaching and drilling. In the areas where blasting is necessary, the holes are drilled as deep as 14 ft, many of them with round or hexagon Bethlehem Hollow Drill Steel. Bethlehem Hollow is the kind of drill steel that operators can always count on for reliable performance. It's a quality steel, through and through. It's available in Carbon and Ultra-Alloy grades . . . in rounds, hexagons and quarter-octagons.

Bethlehem Steel Company, Bethlehem, Pa. Export Distributor: Bethlehem Steel Export Corporation

**BETHLEHEM STEEL**



*Circle 117 on Reader Service Card*

## KENTUCKY ROAD . . .

*continued*

much dirt as they can. Even when they hit the top layers of rock Myers tries to rip it up and move it with scrapers wherever possible to avoid drilling and blasting. Eight DW21's and six drawn scrapers teamed with D9's make up the scraper fleet. Several D8's work as pushers and level the areas used as haul roads.

Once they hit solid rock, Myers' men give up—to a drilling subcontractor, that is. All drill-



**FINISHING**—Scraper spreads blanket of dirt on top of rock before fine grading.

ing and blasting on both contracts is done by the Cambria Drilling Co. of Johnstown, Pa. Behind their crews are two Myers' 2½-yd northwest shovels and one 2½-yd Bucyrus-Erie shovel. Each is working at a rock face on a different level along the cut. But all of the shovels are loading Euclid dump trucks.

The shovels are loading about 3,600 to 4,000 yd of rock in one 8-hr shift. And the operations are carried on in two or three shifts depending upon the weather. On the first contract the rock accounted for 1 million yd of excavation; on the second contract it was 2 million yd.

### Compaction

Wherever rock is used as a fill material, no compaction is required, but one sheepsfoot roller and one segmented-shoe compactor are on the job to take care of areas where earth fill is placed.

Cuts usually are made to a level below the subgrade, and rock fills are stopped before subgrade elevation is reached. This is done to allow room for a blanket of earth that acts as a cushion on top of the rock. The earth also permits more accurate fine grading when subgrade elevation is reached.

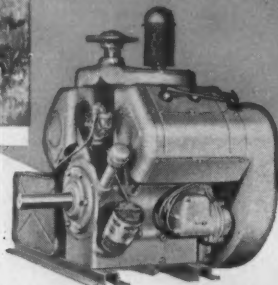
Caterpillar graders handle the fine grading. About four or five of these rigs are on the job at all times. Some of them take care of the fine grading, others keep portions of the work areas level to serve as haul roads, while still others handle various grading operations around the interchanges.

Reinforced concrete structures for grade separations and interchanges are taking shape while the earthmoving is in progress. But here too the work is done by a subcontractor, Roy Ryan & Sons of Evansville, Ind.

Running the job for Ralph Myers Contracting Corp. is Ernest Jackson, superintendent. Kenneth Weaver is the engineer.

**BITUMINOUS DISTRIBUTOR** — made by Municipal Supply Co., South Bend, Ind., and used by Mr. Gooch — spreads 18,000 gallons of material per day. It is Wisconsin-powered.

3 years and  
3,000,000  
gallons of  
bituminous  
spread later...



**MODEL VG4D**—25 to 37 hp.  
Other models from 3 to 56 hp.



## WISCONSIN ENGINE shows little wear

Take the word of an asphalt contractor—an air-cooled Wisconsin Engine is the low-cost power answer for a large bituminous distributor. But let Mr. W. E. Gooch, of Rochester, Ind., tell you why: He used his Municipal Supply distributor three years running to apply about 3,000,000 gallons of asphalt cutback and road oils. At this time, "we took down the Wisconsin Engine, believing that it would certainly require some service," he states.

Upon removing the heads, he was surprised to find *no appreciable*

*engine wear*. Since the heads were off, he had the valves ground — although this could have waited another season, he adds.

Here's proof that an air-cooled Wisconsin can beat the heat and the job. And you don't have to worry about dry-ups, freeze-ups, water, anti-freeze — nor about keeping radiators, fan belts, and other water-cooling parts clean.

Be sure to specify heavy-duty air-cooled Wisconsin Engines on your construction equipment. Get Bulletin S-251. Write to Dept. C-30.



## WISCONSIN MOTOR CORPORATION

MILWAUKEE 46, WISCONSIN

World's Largest Builders of Heavy-Duty Air-Cooled Engines

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CONSTRUCTION METHODS





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boom on  
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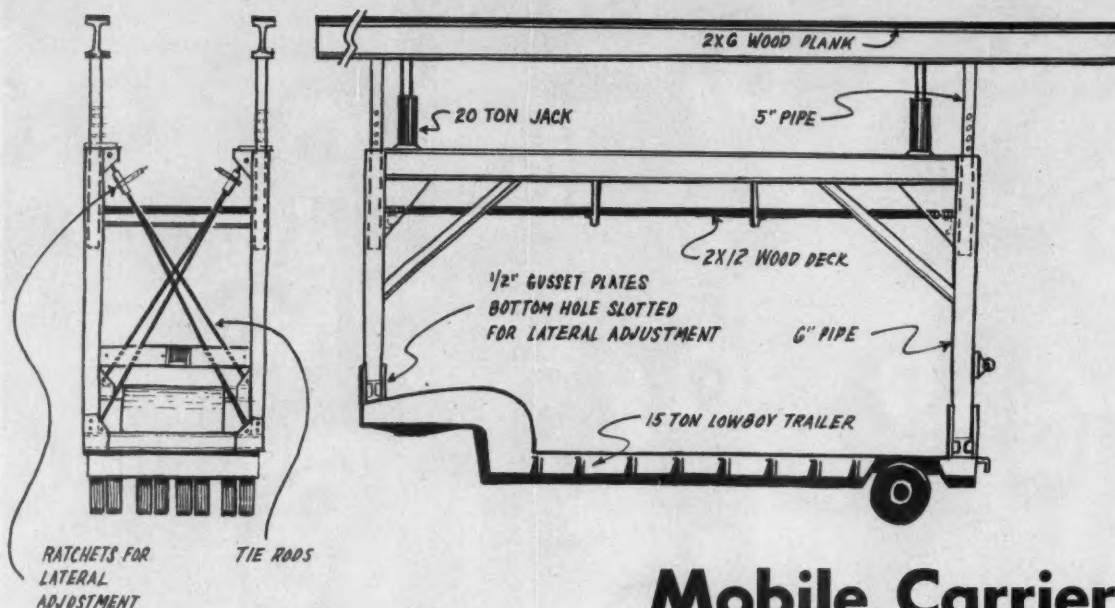


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**THE GENERAL TIRE & RUBBER CO. • AKRON 9, OHIO**



## Mobile Carrier

By A. THOMAS CAROZZA  
Structural Engineer  
U. S. Army Corps of Engineers

A TRAILER-MOUNTED "false-work transport", designed by the contractor, was the key rig in the erection of an unusual roof for an Air Material Command warehouse at Olmsted Air Force Base near Harrisburg, Pa. Ritter Bros., Inc., of Baltimore was the contractor.

Designed and constructed un-

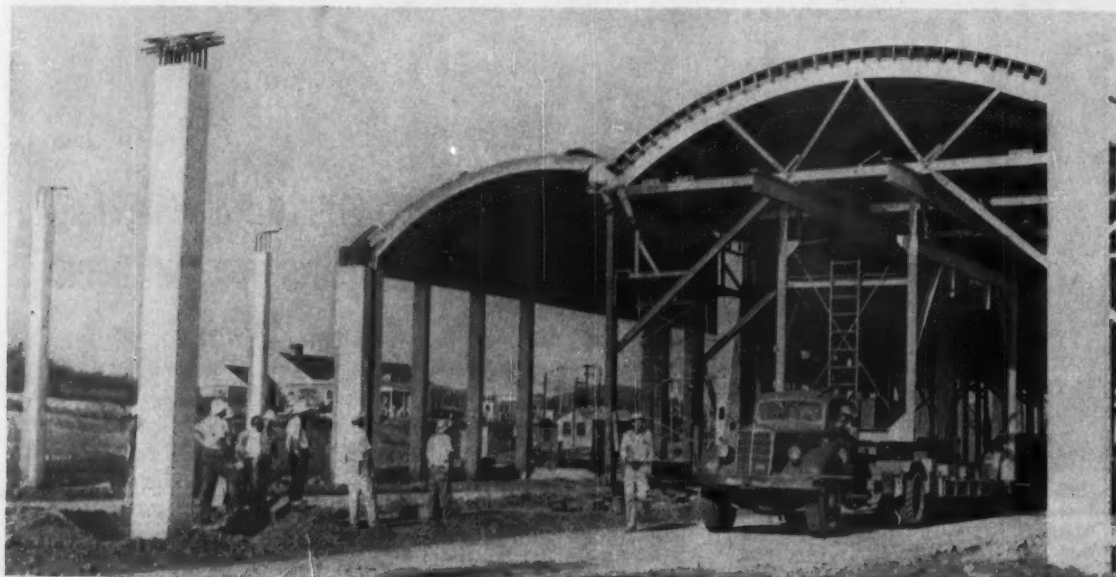
der the supervision of the Army Corps of Engineers, the roof is 400 ft wide and 1,200 ft long. It consists of a series of ten thin-shell concrete barrel arches running the full length of the warehouse.

The roof is supported on reinforced concrete columns spaced about 40 ft transversely and 66 ft longitudinally. One longitudinal expansion joint running down the center of the building and five transverse expansion

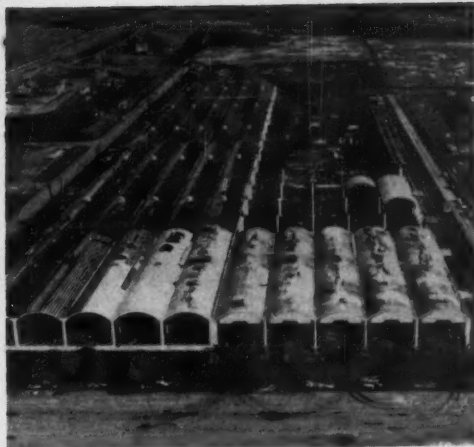
joints divide the roof into 12 areas, each 200 ft square.

The normal way to form a roof of this type would be to lay track beneath the longitudinal axis of the roof and move the formwork forward on a specially-adapted rail car after each pour.

But on this job the specifications required that the roof be poured in 200-ft square sections, bounded by the expansion joints. The designers wanted half the



**MOVING A FORM**—Tractor-trailer unit with steel frame built on trailer advances an arch form to next position. Men on top carefully check small clearances during move.



**COMPLETED WAREHOUSE**—Main part of Olmsted AFB warehouse is 400 ft wide, 1,200 ft long. The arch roof was poured in 12 sections.

**POURING PATTERN**—Design required that sections five arches wide be poured at same time, making rail-mounted forms uneconomical.

## Moves Arch Forms Economically

width of the building poured at once so the lateral forces on the interior columns would be balanced. Only the exterior columns and one row down the middle were designed to handle lateral deflections due to unbalanced end thrusts.

With a rail system, Ritter would have to lay five sets of track at a time—a costly and time-consuming procedure. Instead, they decided to move the falsework with a trailer-mounted structural steel frame.

It was important to grade and roll the ground carefully between the columns so the rig would clear the structure as it moved along. Ritter prepared the roadbed so meticulously that the falsework was able to travel with a 6-in. clearance under the finished roof sections and a 3-in. clearance from each column.

### Falsework Transport

Russell Ritter, of Ritter Bros., designed the transport. He geared a standard 15-ton tractor-trailer to function at extremely low speeds.

Across the front and back edges of the flat-bed trailer he welded 8WF28 beams. On these beams, at the four corners of the trailer, he mounted 6-in. standard pipes, about 14 ft high, to serve as columns for the framing. The columns were bolted to gusset plates welded to the trailer frame.

The bottom bolt holes in the columns were slotted to permit lateral adjustment in case the frame became tilted during a move. Adjustments were made by turnbuckles on tie rods bracing the front and rear pair columns.

At the top of the columns, 12WF27 beams spanned from front to rear on each side to complete the stationary framework. At each end of these beams a 20-ton hydraulic jack was mounted in a vertical position. On top of the jacks, a 14WF30 beam spanned the length of the trailer on each side. These beams and the jacks comprised a frame that could be moved up and down.

For added stability, a vertical 5-in. pipe was welded to the bottom of the moving beams at each end in such a position that it slid up and down in the 6-in. corner column. As a safety precaution, holes were drilled in the 5-in. pipe at 4-in. centers so that steel pins could be inserted to hold the frame in position.

### Moving the Forms

One 200-ft square area required 30 sections of formwork. Each section was set up on falsework posts and was positioned by jacks.

The spacing of the top beams of the movable frame coincided with the spacing of the interior stringers of the falsework. When a form was to be moved, the trailer moved into position under the falsework and the movable frame

was jacked up to bear on the falsework stringers.

The jacks under the falsework posts then were lowered until the entire weight of the forms and falsework was on the movable frame. The frame in turn was lowered by means of its own 20-ton jacks until there was enough clearance between the concrete and forms to move the rig.

The first area to be completed was the northeast corner of the warehouse. The set of 30 forms was then moved successively from east to west until six of the 200x200-ft areas had been poured. The assembly then moved back along the six sections in the south half of the building.

The 30-unit falsework system was positioned 12 times along this U-shaped path. Four individual pours were required for each section. To speed form removal, the last pour was made with high-early-strength concrete.

Cycle time for the positioning-pouring-stripping sequence varied from 3 to 4 weeks.

For Ritter, Ralph Sadler was job superintendent and Joe Bartush was his chief assistant. For the Corps of Engineers, Col. Stanley T. B. Johnson is Baltimore District Engineer and Rufus E. Greene is resident engineer at Olmsted AFB. Timber Structures, Inc., of Ramsey, N. J., fabricated the falsework. Roberts & Schaefer Co. of Chicago and New York was architect-engineer.



Dragline gets inspection from Keith Hutchison, Greer vice president and technical director, Phil Owen and Chuck Daub (l. to r.). Owen and Daub are Standard Oil lubrication specialists who render the school technical assistance on lubrication problems. Both have engineering degrees and both have completed Standard's Sales Engineering School. Daub has ten, Owen five years of field experience serving commercial customers.



## ***Standard Oil helps this school teach men how to keep a construction job going***



Hutchison, Owen and instructor John Rolando watch student load 17-yard off-highway dirt hauler, one of school's 26 units.



## Greer Excavating and Mechanics School has learned one of the lessons it teaches—how to keep equipment in service

**Situation:** Time is money at Greer Excavating and Mechanics School, Braidwood, Illinois. The school promises its students hours of experience operating equipment. It teaches them how to maintain and service the machinery they work with. It also teaches the men how important it is to do the job right and on time.

Up to 70 students, guided by nine experienced instructors, work 26 pieces of equipment almost every daylight hour, seven days a week, winter and summer. Bulldozers, scrapers, trucks, shovels and draglines *must stay in service* in spite of the rugged treatment they get.

**What was done:** From the first day of school more than three years ago, Greer Institute's equipment has been serviced exclusively with

Standard Oil gasoline, diesel fuel, motor oil and greases. No unit has ever been down due to lubrication failure or because of slow delivery. How come? Because Phil Owen, an experienced Standard Oil lubrication specialist from Joliet, just 20 miles from the school, makes regular calls to check out any lubrication problem. From Wilmington, only 5 miles away, Standard Oil agent R. J. Kavanagh makes deliveries of gasoline, diesel fuel, lube oil and grease as often as every other day. The school never needs to telephone for service.

**What you can do:** To get this kind of service call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**



*You expect more from **STANDARD** and you get it!*



Plenty of dirt to work with. School site is on 1,700 acre tract that has been ripped, torn and piled as result of strip mining. Greer instructor, John Rolando teaches student how to use skid shovel.

# CRAWLER TRACTORS



GENERAL DATA												STANDARD TRACKS			MAX. DRAWBAR PULL, LBS (NORMAL GOVERNED ENGINE RPM)							
MAKE AND MODEL	Length, In.	Height, In.	Width, In.	Gears, In.	Weight, Lbs.	Ground Clearance, In.	Tyre Steering	Turning Radius, In.	Price, Base, FOB, Factory	Drawbar HP Rating	Belt HP Rating	Net Engine HP Rating	No. of Shoes, Each Size	Length, In.	Width, In.	Ground Contact, Sq. In.	1st	2nd	3rd	4th	5th	6th
1 ALLIS-CHALMERS HD-GE	127	69	78	81	12,850	11 1/4	Mech. Mech. Booster	90		52	63	66.5	37	76 5/8	13	1,739	12,640	7,900	5,500	4,450	2,975	-
2 HD-11E	154	84	96	74	21,900	13 5/16		106		77	94	99	41	96 1/4	16	3,080	20,470	13,410	9,070	6,800	5,540	3,900
3 HD-16A	181	90	96	78	31,500	14 3/8	Hyd.	113		125	141	148	38	96 5/16	20	3,853	33,100	21,785	15,185	11,270	9,465	6,930
4 HD-16DC	181	90	96	74	32,800	14 3/8	Hyd.	113		-	-	150	41	108	20	4,324	60,000	47,000	26,000	(Torque Converter)		
5 HD-21	197	90	100	84	45,500	16 1/8	Hyd.	128		-	-	225	40	120 1/8	24	5,766	70,000	38,900	(Torque Converter)			
6 J.I. CASE 420	108	56	60	48	4,950	16	Differential	84	3,800	-	35	38	31	57	11	1,254	5,815	3,863	2,203	-	-	-
7 680	106	62 1/2	63	49	6,900	15 1/2		98	7,239	-	-	54	34	62 5/8	14	1,753.5	15,860	9,800	7,739	4,490	(Torque Converter)	
8 6000	105	62 1/2	63	49	7,200	15 1/2		98	8,258	-	-	54	34	62 5/8	14	1,753.5	15,860	9,800	7,739	4,490	(Torque Converter)	
9 8000	114	71 1/2	69	54	11,550	10 15/16		110	10,491	-	-	68	37	73	15	2,190	20,700	11,750	10,000	5,665	(Torque Converter)	
10 1000	115	72 5/8	76	60	13,850	10 15/16		114	12,410	-	-	87	39	79	16	2,528	25,400	14,400	12,290	6,778	(Torque Converter)	
11 CATERPILLAR D6	128 5/16	69 1/8	62 1/8	44	11,000	14				52	59	65	35	72 3/4	13	1,892	13,000	9,270	6,540	4,820	3,520	
12 D6	151 3/4	77 1/4	79 1/2	60	17,445	13 1/2				75	-	93	40	86 7/8	16	2,780	19,495	12,550	8,735	6,005	4,240	
13 D7	167 3/8	81 1/4	97	74	26,735	15 1/2				112	-	140	37	94 3/8	20	3,775	33,250	22,070	14,780	9,620	6,910	
14 D8D	204	94	109 1/16	84	45,912	19 7/8				185	-	235	39	114 11/16	22	5,060	53,150	40,150	28,150	20,850	15,400	10,200
15 D8TC	204	94	109 1/16	84	46,296	19 7/8				-	-	235	39	114 11/16	22	5,060	(Torque Converter)					
16 D8PS	204	94	109 1/16	84	46,951	19 7/8				-	-	235	39	114 11/16	22	5,060	(Torque Converter)					
17 D9D	216 3/16	106 3/16	119 1/2	90	59,773	21 1/4				268	-	335	38	129 5/8	24	6,222	67,190	52,090	36,300	26,000	20,000	13,320
18 D9TC	216 3/16	106 3/16	119 1/2	90	59,961	21 1/4				-	-	335	38	129 5/8	24	6,222	(Torque Converter)					
19 D9PS	216 3/16	106 3/16	119 1/2	90	60,811	21 1/4				-	-	335	38	129 5/8	24	6,222	(Torque Converter)					
20 JOHN DEERE (b) 430 (C4-Roller)	102	69	56	36-38 44-46	4,475	12	Clutch	72		24.1 (c)	28.7 (c)	32 (c)	31	56	10	1,120	4,862	3,964	2,924	1,424	-	-
21 4401C	106	66	61	48	5,850	13	Clutch	78		24.2 (c)	31.91 (c)	37.25 (c)	36	69	10	1,385	6,548	5,689	3,196	2,366	1,595	-
22 4401CD	106	66	61	48	6,150	13	Clutch	78		25.93 (c)	32.88 (c)	37.25 (c)	36	69	10	1,385	7,060	5,860	3,341	2,373	1,548	-
23 EIMCO 630	72	45	55	45	6,500	6	Twin Motors Underdrive Trans.	45	5,670 (d)	-	25 (d)	-	28	43 7/8	9	790	(Torque Motors 10,000 Lbs. Max. Zero Track Slippage)					
24 103	139	90	76 90	60/74	19,000 19,500	17		78	14,800-40* 15,130-74*	-	-	108 (e)	37	88	16	2,820	33,000	10,000	(Torque Converter)			
25 105	150	95	94	74	29,500	11	"	89	20,800 (f)	-	-	143 (f)	40	95	20	3,800	55,000	20,000	(Torque Converter)			
26 105T	150	95	94	74	29,500	11	"	89	21,810 (g)	-	-	154 (g)	40	95	20	3,800	57,200	21,000	(Torque Converter)			
27 106	150	95	96	74	32,000	11	"	89	24,800 (h)	-	-	205 (h)	40	95	22	4,180	64,000	24,000	(Torque Converter)			
28 EUCLID TC12	195	103	137	110	69,000	20	Power To Each Track Hyd. Boost Clutch	115		-	-	425	43	131	27	7,674	(Torque Converter)					
29 C6	185	97	100	78	42,000	17.5		120		-	-	211	43	115.2	22	5,069	(Torque Converter)					
30 INTERNATIONAL TD-9	106	52	48	38	5,600 5,650	12	Planet Power	65 72		31.0	35	40	35	66	10	1,320	5,320	5,150	1,300	2,550	1,790	-
31 T-6	109	69	53	40	7,900 8,500	8 3/4		65 72		41.5	51.5		36	58 5/8 69 3/8	12	1,665	8,715	6,620	4,388	3,495	2,340	-
32 TD-6	109	69	53	40	7,900 8,500	8 3/4		65 72		42.3	-	52	36	58 5/8 69 3/8	12	1,665	8,770	6,625	4,485	3,580	2,400	-
33 T-340	117	74	75	60	11,800	10 3/8		72 85		55.7	-	66	36	71 3/4 83	13	1,965	11,720	10,200	5,800	2,850	2,800	-
34 TD-15	151	82	92	74	21,600	11		98 104		85	-	105	39	89	11	2,850	20,500	16,200	11,800	8,800	6,600	4,400
35 TD-20	167	83	94	74	21,950	14		109 124		111	-	134	40	94	20	3,760	27,500	21,000	17,000	12,000	8,100	4,800
36 TD-25	197	97	104	80	44,450	13 7/8		124		175.1	-	230	42	117 3/4	24	5,862	46,700	36,500	30,300	23,000	16,500	12,500
37 TD-55-TC	197	97	104	80	44,850	13 7/8		124		-	-	230	42	117 3/4	24	5,862	(Torque Converter)					
38 MINNEAPOLIS-MOLINE MOTORAC	117	75	72	54	9,200	11 1/4	Clutch	74 1/2		-	-	-	37	74 1/2	14	2,006	(Torque Converter)					
39 OLIVER OCA-30-46	187	95	56	46	4,095 (m)	18 1/2	Cont. Diff. & Clutch	68	3,397	24.06	26.47	30.20	32	56 1/8	18	1,122	4,966	3,520	2,279	1,261	-	-
40 OCA-30-46	187	95	56	46	4,140 (n)	18 1/2	Cont. Diff. & Clutch	68	3,942	24.75	27.31	30.45	32	56 1/8	18	1,122	5,124	3,951	2,614	1,489	-	-
41 OC-6G	122	56	56	42	5,565	20		89	4,519 (c)	37.0	40.0	45	33	54 1/8	8	866	6,625	5,620	4,010	2,925	2,250	900
42 OC-6D	122	56	56	42	5,705	20		89	5,250	34.7	38	43	33	54 1/8	8	866	6,779	5,204	3,708	2,729	2,104	922
43 OC-8D	118	62	68	54	5,925	13		67	8,415	-	54.7	57	33	71 7/16	12	1,714	16,900	14,691	9,487	5,935	(Torque Conv.)	
44 OC-12D	118	66	76	60	10,925	14 1/8		90	9,255	53.05	59	63	33	71 1/2	14	2,082	11,333	9,310	5,708	3,391	-	-
45 OC-15	128	71	86	74	17,335	14 1/4		119	15,002	94.17	104	110	35	87 1/8	16	2,788	17,218	13,135	8,754	5,417	-	-

- (a) Includes trans., steering cil., brakes  
(b) Five-cylinder model: 35 shoes; turning radius, 78 in; weight, 5,100 lb; track length, 66 in; ground contact, 1,320 sq. in.  
(c) Manufacturer's rating  
(d) Also available with electric motors  
(e) Available with 4-cycle, 105-hp Cummins JFC Diesel (511,120 - 60-hp; 111,020 - 74-hp; FOM Factory)  
(f) Available with 4-cycle, 130-hp Cummins 304 Diesel (320,480 - FOM Factory)  
(g) Available with 4-cycle, 185-hp Cummins RT4 Diesel (21,486 FOM Factory)  
(h) Available with 4-cycle, 300-hp Cummins RT4 Diesel (19,200 Diesel)

- (i) Twin power units, liquid capacities for each engine  
(j) Available as attachment in place of 3rd speed forward  
(k) 7th gear: 6 mph, 10,000 DBPP; 8th gear: 7.7 mph, 7,300 DBPP  
(l) Includes planet housing  
(m) Shipping weight  
(n) At track frame guide supports  
(o) Includes torque converter for spot-turn model, add \$30  
(p) 3rd gear: 3.1 mph; 4th gear: 4.0 mph; 5th gear: 5.0 mph  
(q) Available with Helme 2980-4 50-hp gasoline engine



# Specs for Your Files...

# Construction Methods AND EQUIPMENT

MAX. TRAVEL SPEED, MPH								ENGINE				BELT PULLEY			LIQUID CAPACITIES								
1st	2nd	3rd	4th	5th	6th	Reverse, Low	Reverse, High	Make	Model	Displacement or Gas	No. of Cylinders & Bore & Stroke	Output	RPM at Governor Speeds	Starting Method	Diameter, In.	Face, In.	RPM, Normal	Cooling System, Gal.	Fuel Tank, Gal.	Crankcase, Qtz.	Transmission, Qtz.	Fuel Drive, Qtz. Each	
1.5	2.4	3.3	4	5.5	2.0	2	—	ALLIS-CHALMERS	HD-6	D	4 7/16 x 5 9/16 (5)	1,800	ELECTRIC	12	8 3/4	963	9	40	12	28	12	1	
1.4	2.1	2.9	3.8	4.4	5.7	1.6	4.6		HD-11	D	4 7/16 x 5 9/16 (6)	1,800		13 3/8	10	1,045	11	60	17	27	13	2	
1.4	2.1	3	3.9	4.5	5.8	1.5	4.5		16000	D	5 1/4 x 6 1/2 (5)	1,600		18	15	693	15	100	30	34	22	3	
0-2.5	0-4.3	0-7.2	—	—	—	0-3.2	0-5.5		16000	D	5 1/4 x 6 1/2 (5)	1,600		18	15	693-755	17	100	30	32	22	4	
0-3	0-8.0	—	—	—	—	0-6.0	—		21000	D	5 1/4 x 6 1/2 (5)	1,825		—	—	—	20	135	30	39	30	5	
1.7	2.7	4.5	—	—	—	2	—	CONTINENTAL	G-148	G	3 3/8 x 4 1/8 (4)	1,850	ELECTRIC	8 1/2	6 1/2	1,160	3	17	5 1/2	8	2 1/2	6	
0-1.67	0-3.22	0-3.07	0-6.56	—	—	0-1.83	0-7.20		F-209	G	3 3/16 x 4 3/8 (5)	2,250		—	—	—	—	4.75	25	7	24	4	7
0-1.67	0-3.22	0-3.40	0-6.56	—	—	0-1.83	0-7.20		ED-208	D	3 11/16 x 4 7/8 (4)	2,250		—	—	—	—	4.75	25	10	24	4	8
0-1.6	0-2.9	0-3.3	0-6	—	—	0-1.9	0-7.2		HD-277	D	4 1/2 x 5 1/2 (4)	2,250		—	—	—	—	7 1/2	40	11 1/2	46	8	9
0-1.6	0-2.9	0-3.3	0-6	—	—	0-1.9	0-7.2		JD-382	D	4 1/2 x 6 (4)	2,000		—	—	—	—	8 1/2	45	11 1/2	46	8	10
1.6	2.3	3.2	4.2	5.5	—	1.9	4.9	CATERPILLAR	D-330	D	4 1/2 x 5 1/2 (4)	1,800	GASOLINE ENGINE WITH ELECTRIC STARTER	—	—	—	10	42	16	27	7 12	11	
1.7	2.6	3.6	5	6.6	—	2	6.2		D-333	D	4 1/2 x 5 1/2 (4)	1,600		—	—	—	—	11	65	22	42	13	12
1.5	2.2	3.2	4.6	5.9	—	1.8	5.4		D-339	D	5 3/4 x 8 (4)	1,200		—	—	—	—	17	85	22	45 (a)	23	13
1.5	1.9	2.7	3.5	4.6	6.3	1.5	6.4		D-342	D	5 3/4 x 8 (4)	1,200		—	—	—	—	27	134	38	136 (a)	36	14
L-0-3.5, Int.-0-5.2, H-0-7.6						0-3.5	0-7.6		D-342	D	5 3/4 x 8 (5)	1,200		—	—	—	—	27	134	38	136 (a)	36	15
L-0-2.5, Int.-0-4.4, H-0-6.9						0-2.9	0-8.0		D-342	D	5 3/4 x 8 (5)	1,200		—	—	—	—	27	134	38	172 (a)	36	16
1.7	2.2	3.1	4.0	5.1	7.1	1.7	7.1		D-353	D	6 1/4 x 8 (5)	1,250		—	—	—	—	34	160	49	52	54	17
L-0-4.2, Int.-0-6.0, H-0-8.7						0-4.2	0-8.7		D-353	D	6 1/4 x 8 (5)	1,250		—	—	—	—	36	160	49	60	54	18
L-0-2.6, Int.-0-4.5, H-0-7.0						0-3.1	0-8.3		D-353	D	6 1/4 x 8 (6)	1,280		—	—	—	—	36 3/4	160	49	64	54	19
1.14	2.23	2.98	3.87	7.34	—	1.65	—	Deere	430	G	4 1/4 x 4 (2)	1,850	Elec.	9	6	1,270	2 1/2	10 1/2	5	8	7/8	20	
1.00	1.55	2.84	3.72	5.15	—	1.73	—	Deere	440	G	4 1/4 x 4 (2)	2,000	Elec.	9	6	1,270	2 1/2	10 1/2	5	9	7/8	21	
0.90	1.58	2.91	3.78	5.26	—	1.76	—	GM	2-53	D	7 7/8 x 4 1/2 (2)	1,850	Elec.	9	6	1,270	2 1/2	10 1/2	9	9	7/8	22	
0-1.5	—	—	—	—	—	0-1.5	—	Elanco	201 (d)	—	—	750	—	—	—	—	—	—	—	70	—	23	
0-2.0	0-3.0	0-4.5	0-6.5	Rev. 1 0-2.0	Rev. 2 0-3.0	Rev. 3 0-4.5	Rev. 4 0-6.5		GMC	6-53 (e)	D	3 7/8 x 4 1/2 (4)	2,200	Elec.	—	—	—	11	45	12	16	96	24
0-2.5	0-4.0	—	—	—	—	0-2.5	0-6.0		GMC	4080 (f)	D	4 1/4 x 5 (4)	2,000	Elec.	—	—	—	9	60	13	18	120	76
0-2.5	0-4.0	—	—	—	—	0-2.5	0-6.0		GMC	4101T (g)	D	4 1/4 x 5 (4)	2,000	Elec.	—	—	—	10	60	13	18	120	76
0-2.5	0-4.0	—	—	—	—	0-2.5	0-6.2		GMC	6V71 (h)	D	4 1/4 x 5 (5)	2,100	Elec.	—	—	—	16	60	20	18	120	76
L-0-2, Int.-0-4, H-0-7.8						Same As Forward		ISM 6-71		D	4 1/4 x 5 (5)	2,100	Elec.	—	—	—	36	225	32	280	48	28	
L-0-2.1, Int.-0-4, H-0-7.9						Same As Forward		ISM 6-71		D	4 1/4 x 5 (5)	2,100	Elec.	—	—	—	18	110	16	140	48	29	
1.5	2.3	3.0	4.3	5.9	—	1.9	—	INTERNATIONAL	C-135	G	3 1/4 x 4 1/16 (4)	2,000	ELECTRIC	11	7 1/2	1,001	3 3/4	15	5	46	2	30	
1.6	2.3	3.3	4	5.7	—	1.8	—		263	G	3 9/16 x 4.39 (4)	1,550		12 1/8	8 1/2	811	11	33	9	16	1	31	
1.6	2.3	4.0	5.7	—	—	1.8	3.7		D-282	D	3 11/16 x 4.39 (5)	1,550		12 1/8	8 1/2	811	11	33	9	16	1	32	
1.7	2.5	3.4	4.4	6.0	—	2.0	3.3		D-282	D	3 11/16 x 4.39 (5)	1,700		11	8 1/2	973	12 1/2	33	9	22	1 1/2	33	
1.4	2.0	3.6	5.9	—	—	1.6	—		D-354	D	4 4/8 x 5 1/2 (5)	1,400		11 3/4	11	1,090	20	61	20	28	7 1/2	34	
1.5	1.9	2.6	3.3	4.3	5.8	1.8	7.1		D-681	D	4 3/4 x 6 1/2 (5)	1,550		11 3/4	11	966	24	75	26	42	10	35	
1.5	2.0	2.4	3.3	4.5	7.0	1.8	8.4		817	D	5 3/8 x 6 (5)	1,500		—	—	—	19	135	34	150 (1)	21	36	
1.5	2.0	2.4	3.0	4.1	5.2 (a)	1.5	7.5		817	D	5 3/8 x 6 (5)	1,500		—	—	—	19	135	34	150 (1)	21	36	
0-2.8	0-3.6	0-6.5	0-8.2	—	—	0-2.9	0-7.1		817	D	5 3/8 x 6 (5)	1,500		—	—	—	19	135	34	150 (1)	21	37	
1.3	2.0	2.5	3.2	7.8	—	1.6	(g) 2.5	Moline	D 206 A-4 (f)	D	3 5/8 x 5 (4)	2,000	Elec.	—	—	—	3 1/2	34	6	104	36	38	
1.56	2.37	3.36	5.27	—	—	1.81	—	Herc.	GO-130	G	3 1/2 x 4 1/2 (3)	1,700	ELECTRIC	8 1/2	6 1/2	1,838	3	11	5	8	3/4	39	
1.56	2.37	3.36	5.27	—	—	1.81	—		DO-130	D	3 1/2 x 4 1/2 (3)	1,700		8 1/2	6 1/2	1,838	3	11	5	8	3/4	40	
1.88	2.44	3.23	4.19	5.15	8.85	1.92	3.31	Oliver	185-GLB	G	3 1/2 x 3 3/4 (5)	1,400		—	—	—	4 1/4	16 1/2	5	22	9	41	
1.88	2.44	3.23	4.19	5.15	8.85	1.92	3.31		185-OAB	D	3 5/16 x 3 3/4 (5)	1,400		—	—	—	4 1/4	16 1/2	5	22	9	42	
0-1.33	0-2.45	0-3.79	6.05	—	—	0-2.04	0-4.7	HERCULES	DO-198H	D	3 3/4 x 4 1/2 (4)	2,200		—	—	—	5 1/2	38	8	44 (a)	9	43	
1.08	2.34	3.34	5.27	—	—	1.72	3.80		DOXC	D	3 3/4 x 4 1/2 (5)	1,750		12	8 1/2	1,684	5	35	12	32	8	44	
1.67	2.64	3.36	5.60	—	—	1.99	4.40		DOXC	D	4 5/8 x 5 1/4 (5)	1,500		13	11	975	10 1/2	46	16	36	8	45	

Allis-Chalmers Mfg. Co., Construction Machinery Div., Milwaukee 1, Wis.  
 J.I. Case Co., 700 State St., Racine, Wis.  
 Caterpillar Tractor Co., Peoria, Ill.  
 Deere & Co., Moline, Ill.  
 Elanco Corp., Salt Lake City, Utah  
 Euclid Div., General Motors Corp., Cleveland 17, Ohio  
 International Harvester Co., 130 N. Michigan Ave., Chicago, Ill.  
 Minneapolis-Moline Co., Hopkins, Minn.  
 Oliver Corp., 400 W. Madison St., Chicago, Ill.

# TRACTOR SHOVELS...



MAKE AND MODEL

		BUCKET*							OVERALL DIMENSIONS (IN.)*											
		Type (Wheel or Crawler)	Rated Capacity (yd)	Stock Capacity (yd)	Lifting Capacity (lb)	Carrying Capacity (lb)	Width (in.)	Maximum Dumping Clearance (in.) (Bucket to ground pos.)	Maximum Clearance under Hinge Pin (in.)	Height	Blade	Length (Bucket on ground)	Length (Bucket in carrying position)	Wheel base or Track Length on Ground	Width of Track Shoe or Track Shoe	Tread, Front	Tread, Rear	Tire Size, Front	Tire Size, Rear	Circle Turning Radius
ALLIS-CHALMERS																				
1	HD-6G	C	11/2	11/4	-	80 1/2	100	133 1/2	74	80 1/2	181	-	83 3/16	13	60	-	-	-	-	133
2	HD-11G	C	21/4	17/8	15,000	-	95 1/2	114	139	82	93 1/2	209	-	106 3/4	16	74	-	-	-	146 1/2
3	HD-16G	C	3	2 5/8	29,100	-	111	122	147	99 1/2	111	232	-	116	20	84	-	-	-	-
4	HD-21G	C	4	3 1/2	40,000	-	111	128	160	109	111	254	-	129 1/8	22	84	-	-	-	177 1/2
5	TL-32	W	11/8	-	9,500	4,000	80 1/2	100	123	73 1/2	81	184 1/2	188 1/2	81	-	66 1/2	66 1/2	12.00-24	12.00-24	233
6	TL-34	W	1 1/2	-	12,500	5,400	84 1/2	99	125	75 1/2	84 1/2	195 1/2	193 7/8	84	-	66 1/2	66 1/2	13.00-24	13.00-24	262 1/2
7	TL-36	W	2	-	17,000	7,000	90	108	138	81	90	211	209 1/4	90	-	70 1/2	70 1/2	14.00-24	14.00-24	253
8	TL-280	W	2 3/4	-	21,000	9,000	95 1/2	100	142	87	92	222 1/2	220 3/4	93	-	74	74	16.00-24	16.00-24	305 1/2
J. I. CASE																				
9	W-3	W	1/2	7/16	2,500	-	63 3/8	100	130	61	81	170	182	75 1/4	-	53	66	7.50-16	14.9-24	120
10	W-5	W	1	3/4	4,500	3,000	69 1/2	96	120	70	68 1/2	174	177	80	-	55 5/8	55 5/8	13.00-24	7.50-16	125
11	W-9	W	1 5/8	1 1/4	11,000	5,500	90	102	132	78	90	211	221	84 1/2	-	74 1/2	74 1/2	14.00-24	14.00-24	253
12	W-10	W	2	1 3/4	13,000	6,500	96	102	132	87	94 1/2	228	234	84 1/2	-	76 1/2	76 1/2	16.00-24	16.00-24	273
13	W-12	W	2 1/2	2	15,000	9,000	102	108	139	91	96	233	241	88	-	77 1/2	77 1/2	16.00-24	16.00-24	267
14	420	C	3/4	1/2	3,500	-	62 5/8	106	118	69	60 1/2	137	140	57	11	48	-	-	-	84
15	600	C	1	3/4	5,000	-	62 5/8	108	120	65	63	165	174	62 5/8	14	49	-	-	-	89
16	800	C	1 1/2	1	5,800	-	81	99	127	91	75	185	186	73	15	60	-	-	-	108
17	1000	C	2	1 1/4	7,800	-	81	102	134	92	76	197	198	79	16	60	-	-	-	118
CATERPILLAR																				
18	933	C	-	11/8	-	-	70	93 3/8	119 1/16	75 3/8	70	168 7/16	-	74 1/2	12	54	-	-	-	-
19	965	C	-	1 3/4	-	-	80	99 3/4	130 1/4	84 5/8	80	180 3/4	-	85 1/4	15	60	-	-	-	-
20	977	C	-	2 1/2	-	-	96	112	144	90 1/4	96	207 7/8	-	106 1/8	18	74	-	-	-	-
21	922	W	-	1 1/4	-	-	83 1/2	103	134	94 1/4	83 1/2	197	-	78	-	68	68	12.00-24	12.00-24	242 1/2
22	944	W	-	2	-	-	93 1/2	109 7/8	143 3/4	107	93 1/2	216	-	88	-	74	74	14.00-24	14.00-24	240 1/2
23	966	W	-	2 3/4	-	-	104 1/2	116 1/4	154 1/4	106	104 1/2	242 3/8	-	94	-	79	79	16.00-24	16.00-24	249
MICHIGAN																				
24	(Clark Equip't Co.) 12B	W	16 cu ft	15 cu ft	2,900	-	50	57	76	61	50	122	122	51	-	-	-	-	-	78
25	55A	W	1	3/4	6,000	-	79	96	114	81	78	183	183	75	-	65	58	13.00-24	13.00-24	205
26	55B	W	1	3/4	5,400	-	79	96	114	81	78	183	183	75	-	65	67	13.00-24	9.00-16	124
27	75A	W	1 1/4	1	7,000	-	79	96	116	80	82 1/2	202 1/2	199	75	-	65 1/2	67 1/2	14.00-24	14.00-24	196
28	85A	W	1 3/4	1 1/2	9,000	-	85	92	100	80	80 1/2	210	206	75	-	65 1/2	67 1/2	14.00-24	14.00-24	196
29	125A	W	2 1/4	2	13,000	-	96	99	127	92	92 1/2	239	234	80	-	77 1/2	77 1/2	16.00-24	16.00-24	276
30	175A	W	2 3/4	2 3/8	17,000	-	101 1/2	105	140	99	103	261	258	100	-	84	84	18.00-25	18.00-25	282
31	275A	W	4 1/2	3 3/4	22,000	-	128	121	155	127	123	284	286	104	-	96	96	26.5-25	26.5-25	329
32	375A	W	6	5	29,000	-	140	125	164	133	135	326	327	122 1/2	-	106	106	29.5-29	26.5-29	355
EJEO																				
33	630	C	1/2	3/8	5,500	5,500	54	-	-	59 1/2	68 5/8	112	75 1/8	44	9	45	-	-	-	45
34	105 Excavator	C	2	1 1/2	20,000	20,000	90	-	-	114	92	192	92	96	16	74	-	-	-	83
35	123	C	2 1/4	2	15,000	20,000	77	44	144	135	92	182 1/2	188	88	18	74	-	-	-	80
36	125	C	3	2 3/4	25,000	20,000	96	53	174 1/4	131	94	268	264	95	20	74	-	-	-	84
37	126	C	3	2 3/4	25,000	33,000	94	53	174 1/4	131	94	217	110	95	20	74	-	-	-	84
EUCLID																				
38	L-7	W	19 cu ft	14 cu ft	3,000	2,700	48	60	78	60	50	121 1/2	116 1/2	40	-	40	36	7.50-16	6.00-9	81
HOUGH																				
39	HA	W	2/3	1/2	3,000	2,000	49	62 1/2	78	58	51	123	120	48	-	40	35	7.50-16	6.00-9	76
40	H-25	W	3/4	2/3	-	2,500	52	64 1/2	79	62	49	123	119	48	-	40	35	7.50-16	6.00-9	76
41	HAH	W	1	7/8	4,000	3,000	73	96	120	74	70	170	167	60	-	56	53	12.00-24	7.00-15	118
42	H-30R	W	1	3/4	4,000	3,000	62	96	119	74	70	190	182 1/2	68.5	-	57	64	9.00-20	13.00-24	190
43	H-30	W	1	3/4	5,000	3,000	84	100	122 1/2	86	80	196 1/2	195 1/2	75	-	66	66	12.00-24	12.00-24	214
44	H-40	W	1 1/4	1	10,000	5,000	80	94	121	82 1/2	80	201	197	82	-	66	64	13.00-24	13.00-24	225
45	H-70	W	2	1 3/4	13,000	7,000	92	108	137	84	86	220	215	85	-	70	70	14.00-24	14.00-24	246
46	H-90	W	3	2 1/2	18,000	9,000	102	119	151	95	104	245	239	100	-	82	82	18.00-25	18.00-25	276
47	H-120	W	4 1/4	3 3/4	22,000	12,000	120	130	175 1/2	147	120	284	283	106	-	90	90	26.5-25	26.5-25	276
48	H-12	C	13/4	1 1/3	-	-	86	106	136	90	75	198	193	75	15	75	-	-	-	134

\* Bucket dimensions and overall dimensions given are those for bucket size shown. Practically all tractor shovels can be equipped with several sizes and types of buckets.

\*\* PS - Power Shift; TC - Torque Converter; PR - Power Reversing

(a) Also available with electric motors.  
(b) Also available with GM diesel engine.  
(c) Also available with Cummins diesel engine.  
(d) Also available with IH diesel engine.

Tractor Shovel Specifications continued on next page

# Specs for Your Files...

# Construction Methods AND EQUIPMENT

ENGINE												TRANSMISSION				LIQUID CAPACITIES											
DIESEL						GASOLINE																					
Make	Model	Rated HP	Rated RPM	No. of Cylinders	Displacement (cu. in.)	Make	Model	Rated HP	Rated RPM	No. of Cylinders	Displacement (cu. in.)	Type**	Max. Speed Forward (mph)	Max. Speed Reverse (mph)	Type	Drive - Front, Rear, All Wheels	Steering - Front, Rear	Shipping Weight (lb)	Drum Oil (lb)	Fuel Tank (gal)	Cooling System (gal)	Crank Case (qts.)	Transmission (qts.)	Hydraulic System (qts.)			
A-C	HD6	-	1,800	4	344	-	-	-	-	-	-	Selection Type	4.2	5.5	4.1	-	-	21,000	16,570	40	9	12	20	100	1		
A-C	HD11	-	1,800	6	516	-	-	-	-	-	-	Selection Type	6.3	5.7	4.4	-	-	32,000	26,980	60	11	17	27	192	2		
A-C	16,000	-	1,800	6	944	-	-	-	-	-	-	Selection Type	3.2	7.2	5.5	-	-	49,000	60,000	100	14%	30	32	220	3		
A-C	21,000	-	1,825	6	884	-	-	-	-	-	-	Selection Type	2.1	7.8	3.0	-	-	66,500	70,000	135	18	30	39	240	4		
A-C	D262	76.5	2,200	6	262	A-C	G226	77	2,000	4	226	PR	4.4	21.2	27.9	A	R	11,550	-	22	5 1/2	7	32	100	5		
A-C	60A273	83	2,200	6	273	A-C	G262	86	2,200	6	262	PS	3.3	26	26	A	R	14,850	-	33	5 1/2	7	36	116	6		
A-C	40D344	104	2,200	4	344	Herc.	G20-339	100	2,200	6	339	PS	3.3	27	27	A	R	18,000	-	33	7	13	30	120	7		
A-C	D516	138	2,200	6	516	-	-	-	-	-	-	PS	3.3	30	30	A	R	23,250	-	39	10 1/2	15 1/2	37	135	8		
Caso	1880	52	2,100	4	188	Caso	199C	52	2,100	4	159	F-8 Shuttle TC	8.8	19	24	Mech.	R	3,715	6,000	22	4 1/2	4	17	16	9		
Caso	G1880	57	2,250	4	188	Caso	188C	57	2,250	4	188	F-8 Shuttle TC	4.4	10	23	Mech.	F	9,067	-	18	4 1/2	4	44	34	10		
Caso	301D	80	2,000	4	301	Caso	289C	80	-	4	289	TC	3.3	23	23	Hyd	A	15,400	-	35	10 1/2	9	30	56	11		
Caso	401D	100	1,800	6	401	-	-	-	-	-	-	TC	3.3	22	22	Hyd	A	18,000	-	35	10 1/2	14	30	56	12		
Caso	451D	120	2,000	6	451	-	-	-	-	-	-	TC	3.3	24	24	Hyd	A	20,940	-	40	10 1/2	14	30	105	13		
-	-	-	-	-	-	Caso	G1480	42	1,800	4	148	TC	3.1	4.5	2	Diff.	-	9,125	5,815	17	3	5 1/2	8	24	14		
Cont.	E2008	62	2,250	4	208	Cont.	F209	62	2,250	4	208	TC	4.4	6.5	7.2	Hyd	-	11,700	15,800	25	4 1/2	9	36	32	15		
Cont.	H0277	80	2,250	4	277	-	-	-	-	-	-	TC	4.4	6	7.2	Hyd	-	20,970	20,700	40	7 1/2	10	48	80	16		
Cont.	J0382	100	2,000	4	382	-	-	-	-	-	-	TC	4.4	6	7.2	Hyd	-	23,470	25,400	45	8 1/2	10	48	72	17		
CAT	D320	52	1,800	4	252	-	-	-	-	-	-	Selector	4.2	5.48	3.67	-	-	16,300	-	45	5	14	8	80	18		
CAT	D350	100	1,800	4	350	-	-	-	-	-	-	PS	4.4	4.9	8.2	-	-	24,800	-	52	10 1/2	16	68	110	19		
CAT	D351	150	1,800	6	525	-	-	-	-	-	-	PS	4.4	4.7	5.7	-	-	36,270	-	75	12 1/2	22	54	146	20		
CAT	D320	80	2,400	4	252	Cont.	-	80	2,400	6	330	TC	-	4.8	4.8	A	R	15,950	-	30	9	10-18	32	112	21		
CAT	D330	105	2,200	4	330	Cont.	-	105	2,200	6	427	TC	-	4.8	4.8	A	R	15,950	-	40	9	10-18	34	115	22		
CAT	D351	140	2,380	6	525	-	-	-	-	-	-	TC	-	4.8	4.8	A	R	25,400	-	40	11 1/2	28	44	124	23		
Wauk.	180DLC	42	2,200	4	144	Wauk.	180GLB	44	2,200	4	144	PS	2.1	11	10	Hyd	F	6,110	-	8	-	-	-	-	24		
Cont.	F226	66.5	2,200	6	226	-	-	-	-	-	-	PS	4.4	26	26	Hyd	A	10,800	-	30	-	-	-	-	25		
Cont.	F226	66.5	2,200	6	226	-	-	-	-	-	-	PS	4.4	26	26	Hyd	F	10,300	-	30	-	-	-	-	26		
Wauk.	190DLC	80	2,200	6	265	Wauk.	190GL	77	2,200	6	265	PS	4.4	26	26	Hyd	A	13,900	-	30	-	-	-	-	27		
GM	5043	102	2,200	4	212	Wauk.	195GX	96	2,200	6	320	PS	4.4	26	26	Hyd	A	15,000	-	30	-	-	-	-	28		
Comer.	JH	122	2,200	6	401	Wauk.	135GX	127	2,200	6	426	PS	4.4	24	24	Hyd	A	22,100	-	40	-	-	-	-	29		
Comm.	C-175	162	2,200	6	464	Wauk.	135DKB	133	2,200	6	426	PS	4.4	27	27	Air	A	28,800	-	55	-	-	-	-	30		
Comm.	NT06-B1	262	2,100	6	743	-	-	-	-	-	-	PS	4.4	28	28	Air	A	48,200	-	75	-	-	-	-	31		
Comm.	NT06-B1	335	2,100	6	743	-	-	-	-	-	-	PS	4.4	25	25	Air	A	62,000	-	120	-	-	-	-	32		
Einco	201 AH <sup>(b)</sup>	24	750	5	-	-	-	-	-	-	-	Twin Motors	1.1	1.5	1.5	-	-	10,300	10,000	-	-	-	-	-	33		
Comet.	NHC81-400	130	2,000	4	284	-	-	-	-	-	-	PS	2.2	5.5	5.5	-	-	38,500	55,000	45	9	13	120	16	34		
GM <sup>(c)</sup>	4-51	107	2,200	4	212.3	-	-	-	-	-	-	PS	4.4	6.5	6.5	-	-	23,100	33,600	45	11	12	96	240	35		
GM <sup>(c)</sup>	4080	143	2,000	4	284	-	-	-	-	-	-	PS	2.2	5.5	5.5	-	-	40,000	55,000	60	9	13	120	420	36		
GM	6V-71	218	2,100	6	425.6	-	-	-	-	-	-	PS	2.2	6.8	6.8	-	-	49,500	64,000	60	16	20	120	420	37		
-	-	-	-	-	-	Cont.	F-162	49	2,400	4	162	PS	2.2	11.4	11.4	Hyd	-	5,300	-	6.2	3	4	11	16.5	38		
Wauk.	180DLC	38	2,000	4	144	Wauk.	FC	33	2,000	4	133	TC	2.2	6.3	10.2	Hyd	F	5,330	4,500	6.5	4	5 1/2	15	16	39		
Wauk.	180DLC	42	2,200	4	144	Wauk.	180GLB	44	2,200	4	144	PS	2.2	3.5	11.0	Hyd	F	6,250	5,500	9	4	6	11 1/2	25	40		
-	-	-	-	-	-	Herc.	JX4C-3	51	2,000	4	108	TC	4.4	17.7	29.0	Hyd	F	9,600	4,400	15	4 1/2	5 1/2	15	32	41		
-	-	-	-	-	-	Herc.	QXD-3	66.5	2,200	6	230	TC	4.4	19.5	28.6	Hyd	R	11,800	9,900	22	4 1/2	6	17	46	42		
IH	U0236	72	2,200	6	236	IH	U240	77.5	2,200	6	240	PS	3.3	21.3	25.7	Hyd	A	10,500	10,000	31	4 1/2	7	14	40	41		
IH	U0282	90	2,200	6	282	IH	U264	92	2,200	6	264	PS	3.3	19.7	23.8	Hyd	A	14,650	12,300	30	6	8	24	60	44		
Comm.	JH 801	124	2,250	6	401	-	-	-	-	-	-	PS	3.3	22.0	28.0	Hyd	A	20,000	15,100	30	6	10	24	64	45		
Comm.	C-175	162	2,100	6	464	-	-	-	-	-	-	PS	3.3	29.0	29.0	Air	A	28,130	20,000	40	9	21	30	102	46		
Comm.	MRT-481	300	2,100	6	783	-	-	-	-	-	-	PS	4.4	26.0	26.0	Air	A	44,000	35,000	95	12	52	45	108	47		
IH	UD-370	91.5	2,000	4	370	-	-	-	-	-	-	PS	3.3	10.0	11.6	Hyd	-	22,400	22,400	44	10 1/2	11	24	114	48		

Allis-Chalmers Mfg. Co., Construction Machinery Div., Milwaukee 1, Wis.  
 J. I. Case Co., 700 State St., Racine, Wis.  
 Caterpillar Tractor Co., Peoria, Ill.  
 Clark Equipment Co., Construction Machinery Div., Benton Harbor, Mich.  
 Einco Corp., 634-666 S. Fourth West St., Salt Lake City 10, Utah  
 Euclid Div., General Motors Corp., Cleveland 17, Ohio  
 The Frank G. Hough Co., Libertyville, Ill.



# TRACTOR SHOVELS... continued



MAKE AND MODEL

		BUCKET*										OVERALL DIMENSIONS, IN.*										
		Type (Wheel or Crawler)	Rated Capacity (yd)	Stock Capacity (yd)	Lifting Capacity (lb)	Carrying Capacity (lb)	Width (in.)	Maximum Dumping Clearance (in.) (Bucket in dump position)	Maximum Clearance under ROPS Pin (in.)	Height	Width	Length (bucket on ground)	Length (bucket in carrying position)	Wheel Size at Front	Wheel Size at Rear	Track Length on Ground	Track Gauge	Front Fwd	Track Rear	Trim Size Front	Trim Size Rear	Outside Turning Radius
INT'L HARVESTER																						
49	T-340 4 in 1	C	3/4	3/4	6,600	3,250	62	114	117	52	62	163	153	66	10	48	-	-	-	-	-	
50	T-6 4 in 1	C	1 1/8	1 1/8	10,900	4,500	71	117	118	66 7/8	71	166	159	72 3/8	12	54	-	-	-	-	-	
51	T-6 Skid Shovel	C	1 1/8	1 1/8	11,900	5,200	71	98	118	66 7/8	71	161	155	72 3/8	12	54	-	-	-	-	-	
52	TD-6 4 in 1	C	1 1/8	1 1/8	10,900	4,500	71	118	118	66 7/8	71	166	160	72 3/8	12	54	-	-	-	-	-	
53	TD-6 Skid Shovel	C	1 1/8	1 1/8	11,900	5,200	71	98	118	66 7/8	71	161	155	72 3/8	12	54	-	-	-	-	-	
54	TD-9 4 in 1	C	1 1/2	1 1/2	15,500	6,800	78	125	126	72	78	184	174	81 1/2	15	60	-	-	-	-	-	
55	TD-9 Skid Shovel	C	1 1/2	1 1/2	16,200	7,050	78	102	126	72	78	156	169	81 1/2	15	60	-	-	-	-	-	
56	TD-15 4 in 1	C	2 1/4	2 1/4	25,400	10,700	96	143	144	81 1/2	96	233	209	90 1/2	18	74	-	-	-	-	-	
57	TD-15 Skid Shovel	C	2 1/4	2 1/4	28,000	12,800	96	119	144	81 1/2	96	204	195	90 1/2	18	74	-	-	-	-	-	
58	TD-20-420 (200 Ser) Int.-Drive 4 in 1	C	3	3	38,300	14,850	96	157	158	85	96	248	226	100	18	74	-	-	-	-	-	
59	TD-20-420 (200 Ser) Int.-Drive Skid Shovel	C	3	3	38,300	14,850	96	125	158	85	96	228	200	100	18	74	-	-	-	-	-	
LULL																						
60	42 <sup>(a)</sup>	W	2	1 3/4	10,000	10,000	91 1/2	136	157	100	92	259	245	106	-	75	75	14.00-20	14.00-20	300	-	
MASSEY-FERGUSON																						
61	406	W	7/8	5/8	9,900	5,000	68	100 1/2	126	74	75	182	180	86	-	59 1/2	62 1/2	7.50-15	14.00-24	185	-	
62	1801	W	1	3/4	9,900	5,000	75	96	124	69	75	192 1/2	190	86	-	59 1/2	62 1/2	14.00-24	7.50-15	165	-	
MINNEAPOLIS-MOLINE																						
63	Mo Trac	C	1 1/8	7/8	4,700	-	72	106 3/4	131 1/4	75	72	185	186	74 1/2	54	-	-	-	-	-	82	
NELSON																						
64	130	W	1 5/8	1 1/4	9,000	5,500	91	138	138	88	88	209	204	85	-	75	75	13.00-24	13.00-24	240	-	
65	200	W	2 1/4	1 3/4	13,000	8,000	92	114	147	91	86	220	214	88	-	77	77	14.00-24	14.00-24	245	-	
OLIVER																						
66	OC-46	C	3/4	5/8	2,500	3,100	57 1/2	80	113	50	57 1/2	144	-	56 1/8	10	46	-	-	-	-	90	
67	OC-96	C	1 1/4	1	5,100	8,300	68	96	117 1/2	62	68	161	-	71 7/16	12	54	-	-	-	-	90	
68	OC-126	C	1 5/8	1 1/2	5,000	8,000	80	92 1/2	123 1/2	57	80	166 1/2	-	71 1/2	13	60	-	-	-	-	126	
69	OC-156	C	2 1/2	2 1/4	9,000	12,000	96	110	132	67 1/2	96	180	-	87 1/8	16	74	-	-	-	-	120	
OTTAWA																						
70	Master	W	-	3/4	4,500	-	70	102	-	78	78	-	-	73	-	68	68	10.00-24	10.00-24	-	-	
PETTERSON-MULLIKEN																						
71	125	W	1 1/2	1 1/4	11,000	5,500	76	98	130	84	87	224	233	84	-	62	68	13.00-24	13.00-24	273	-	
72	125-A	W	1 1/2	1 1/4	11,000	5,500	76	98	130	84	87	224	233	84	-	62	68	13.00-24	13.00-24	278	-	
73	PM-240	W	2 1/4	1 3/4	11,000	7,000	91	96	134	95	87	217	-	84	-	69	69	14.00-24	14.00-24	283	-	
74	PM-240-A	W	2 1/4	1 3/4	11,000	7,000	91	96	134	95	87	217	-	84	-	69	69	14.00-24	14.00-24	283	-	
75	175	W	2 1/4	1 3/4	15,000	7,500	85	106	139	84	89	234	241	89	-	72	74	14.00-24	14.00-24	294	-	
76	PM-340	W	2 3/4	2 1/4	15,000	9,000	96	106	141	97	96	233	-	93	-	78	79 1/2	16.00-24	16.00-24	296	-	
77	250	W	3 1/4	2 1/2	21,000	10,500	96	106	144	96	98	249	242	89	-	79	80	16.00-24	16.00-24	326	-	
78	PM-440	W	3 1/4	2 3/4	21,000	11,000	108	108	142	102	109	240	-	100	-	85	86	20.5-25	20.5-25	337	-	
SCOOPMOBILE <sup>(1)</sup>																						
(Minimobile Mfrs.)																						
79	H	W	1 1/4	1	5,350	4,000	79	108	141	93	88	206	202	113	-	67	-	13.00-24	9.00-20	54	-	
80	HP	W	1 1/4	1	5,350	4,000	79	108	141	93	88	206	202	113	-	67	-	13.00-24	9.00-20	54	-	
81	LD-5	W	1 1/2	1 1/4	7,250	5,000	86	100	142	83	81	243	233	99	-	63	63	14.00-24	14.00-24	257	-	
82	LD-7	W	2	1 3/4	15,575	7,500	98	108	145	97	93	232	243	104	-	73	73	14.00-24	14.00-24	265	-	
83	LD-7-A	W	2 1/2	2	17,300	9,000	98	108	146	99	94	254	247	106	-	73	73	16.00-24	16.00-24	322	-	
84	LD-8-AD	W	3 1/2	3	23,330	15,000	98	120	174	104	103	315	301	135	-	83	73	18.00-25	18.00-25	286	-	
THEY-ORAH																						
(Tractor Shovel Co.)																						
85	ML-157	W	1 3/4	1 1/2	11,000	6,000	93	100	122	82	96	212	221	86	-	-	-	14.00-24	14.00-24	252	-	
86	ML-153	W	2	1 3/4	14,000	7,000	93	100	123	82	96	213 1/2	219	86	-	-	-	14.00-24	14.00-24	252	-	
TROJAN																						
(Vale & Thomas Mfg. Co.)																						
87	114	W	1 1/8	1	6,500	-	88	106	122	72	90	208	204	88	-	76	76	12.00-24	12.00-24	258	-	
88	134	W	1 1/8	1 1/8	8,000	-	94	102	122	75	93	206	204	92	-	76	76	13.00-24	13.00-24	258	-	
89	164	W	1 1/2	1 3/8	10,000	-	94	100	123	75	93	211	208	92	-	76	76	13.00-24	13.00-24	258	-	
90	204	W	2	1 3/4	12,000	-	94	103	127	75	94 1/2	236	214	92	-	76	76	14.00-24	14.00-24	270	-	
91	254	W	2 1/2	2 1/8	15,000	-	110	106	133	80	106	240	234	96	-	86	86	14.00-24	14.00-24	290	-	
92	304	W	3	2 1/2	19,000	-	110	108	141	84	100	256	248	96	-	86	86	16.00-24	16.00-24	290	-	
93	404	W	4	3 5/8	24,000	-	120	126	161	104	115	280	264	111	-	93	93	18.00-25	18.00-25	398	-	
94	L.H.W. 75	W	1 1/4	1	5,000	-	78	97	121 1/2	77	82 1/2	197	194	81	-	62	68	14.00-24	9.00-20	194	-	

\* Bucket dimensions and overall dimensions given are those for bucket size shown. Practically all tractor shovels can be equipped with several sizes and types of buckets.

PS - Power Shift; TC - Torque Converter; PR - Power Reversing

(b) Also available with GM diesel engine.

(c) Also available with Cummins diesel engine.

(d) Also available with IH diesel engine.

(e) Model 44 is same as model 42, but has four-wheel steering.

(f) Also available with Chrysler gasoline engine.

(g) Includes torque converter.

(h) Also available with Hercules diesel engine.

(i) Specifications for models LD17AD and LD 15 AD are not yet available.

# Specs for Your Files...

# Construction Methods AND EQUIPMENT

ENGINE										TRANSMISSION										LIQUID CAPACITIES				
DIESEL					GASOLINE					Type					Type					Type				
Make	Model	Rated HP	Rated RPM	No. of Cylinders	Make	Model	Rated HP	Rated RPM	No. of Cylinders	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)	Max. Speed (mph)
IN	C 135	45	2,000	4	IN	C 135	45	2,000	4	IN	C 135	45	2,000	4	IN	C 135	45	2,000	4	IN	C 135	45	2,000	4
IN	C 263	55	1,800	6	IN	C 263	55	1,800	6	IN	C 263	55	1,800	6	IN	C 263	55	1,800	6	IN	C 263	55	1,800	6
IN	D 282	55	1,800	6	IN	D 282	55	1,800	6	IN	D 282	55	1,800	6	IN	D 282	55	1,800	6	IN	D 282	55	1,800	6
IN	DT 282	71	1,800	6	IN	DT 282	71	1,800	6	IN	DT 282	71	1,800	6	IN	DT 282	71	1,800	6	IN	DT 282	71	1,800	6
IN	554	115	1,600	6	IN	554	115	1,600	6	IN	554	115	1,600	6	IN	554	115	1,600	6	IN	554	115	1,600	6
IN	554	115	1,600	6	IN	554	115	1,600	6	IN	554	115	1,600	6	IN	554	115	1,600	6	IN	554	115	1,600	6
IN	681	134	1,550	6	IN	681	134	1,550	6	IN	681	134	1,550	6	IN	681	134	1,550	6	IN	681	134	1,550	6
IN	681	134	1,550	6	IN	681	134	1,550	6	IN	681	134	1,550	6	IN	681	134	1,550	6	IN	681	134	1,550	6
Herc.	DD 290 <sup>(3)</sup>	91	2,200	6	Herc.	DD 290 <sup>(3)</sup>	91	2,200	6	Herc.	DD 290 <sup>(3)</sup>	91	2,200	6	Herc.	DD 290 <sup>(3)</sup>	91	2,200	6	Herc.	DD 290 <sup>(3)</sup>	91	2,200	6
-	-	-	-	-	Cont.	E-308	57.5	2,000	4	Hyd. Shuttle	E-308	57.5	2,000	4	Disc	R-F	10,000	5,300	24	6	8	64	64	64
-	-	-	-	-	Cont.	E-308	57.5	2,000	4	Hyd. Shuttle	E-308	57.5	2,000	4	Disc	F-R	10,015	5,300	24	6	8	64	64	62
Malina	028A-4	53	2,000	4	Malina	028A-4	53	2,000	4	Pre Select. with Dyn. Shuttle	028A-4	53	2,000	4	Disc	-	14,700	10,000	34	3 1/2	6	104	36	63
Herc.	029B-H	96	2,200	6	Herc.	G-290	107	2,200	6	Synch. Mech.	G-290	107	2,200	6	Hyd. Visc. Reduced	A-R	15,700	-	30	9	8	53	96	64
GM	3-71	105	2,200	3	Cont.	M-363	117	2,200	6	Synch. Mech.	M-363	117	2,200	6	Hyd. Visc. Reduced	A-R	20,500	-	40	8 1/2	8	53	128	65
Herc.	DO-130	30.45	1,700	3	Herc.	GO-130	30.2	1,700	3	Shut. Gear	GO-130	30.2	1,700	3	Shut. Gear	-	7,600	5,124	11	9	5	8	28	66
Herc.	DO-180 H	57	2,200	4	-	-	-	-	-	TC	-	-	-	-	Shut. Gear	-	14,150	16,900	38	5 1/2	8	44 <sup>(4)</sup>	48	67
Herc.	DOXC	63	1,750	5	-	-	-	-	-	Shut. Gear	-	-	-	-	Shut. Gear	-	17,325	11,333	35	5	12	32	68	68
Herc.	DOXC	110	1,500	6	-	-	-	-	-	Shut. Gear	-	-	-	-	Shut. Gear	-	27,700	17,218	46	10 1/2	16	36	104	69
-	-	-	-	-	Cont.	F-162	52	2,800	4	TC	-	-	-	-	Hyd.	A-F	-	-	-	-	-	-	-	70
GM	3-71	109	2,200	3	Herc.	GO-309	109	2,200	6	PS	GO-309	109	2,200	6	Hyd.	A-R	16,050	-	30	-	-	-	-	71
GM <sup>(5)</sup>	3-71	109	2,200	3	Herc.	GO-309	109	2,200	6	PS	GO-309	109	2,200	6	Hyd.	A-R	16,400	-	30	-	-	-	-	72
GM	3-71	109	2,200	3	Herc.	GO-339	109	2,200	6	PS	GO-339	109	2,200	6	Hyd.	A-R	19,000	-	30	-	-	-	-	73
GM <sup>(5)</sup>	3-71	109	2,200	3	Herc.	GO-339	109	2,200	6	PS	GO-339	109	2,200	6	Hyd.	A-R	19,400	-	30	-	-	-	-	74
GM	3-71	109	2,200	3	Herc.	WXX-3	124	2,200	6	PS	WXX-3	124	2,200	6	Hyd.	A-R	20,200	-	30	-	-	-	-	75
GM <sup>(5)</sup>	4-71	152	2,200	4	Herc.	WXX-3	125	2,200	6	PS	WXX-3	125	2,200	6	Hyd.	A-R	24,900	-	40	-	-	-	-	76
GM <sup>(5)</sup>	4-71	152	2,200	4	-	-	-	-	-	PS	-	-	-	-	Hyd.	A-R	25,500	-	43	-	-	-	-	77
Comm. <sup>(6)</sup>	JWS	175	2,500	6	-	-	-	-	-	PS	-	-	-	-	Hyd.	A-R	31,775	-	43	-	-	-	-	78
-	-	-	-	-	Chrys.	IND 6	100	2,600	6	PS	IND 6	100	2,600	6	Hyd.	F-F	12,640	8,100	24	20	6	-	20	79
-	-	-	-	-	Chrys.	IND 6	100	2,600	6	PS	IND 6	100	2,600	6	Hyd.	F-F	10,700	8,100	24	22	6	-	20	80
Comm.	C-105	185	2,500	4	Chrys.	IND 6	100	2,600	6	PS	IND 6	100	2,600	6	Hyd.	A	14,400	10,900	38	22	6	-	30	81
Comm.	JF5	96	2,200	6	Wauk.	135 GA	102	2,600	6	PS	135 GA	102	2,600	6	Hyd.	A	10,325	13,700	33	27	7	36	33	82
Comm.	JWS	130	2,400	6	Wauk.	135 GA	132	2,600	6	PS	135 GA	132	2,600	6	Air	A	22,130	16,600	33	34	8	36	33	83
Comm.	JWS	175	2,500	6	-	-	-	-	-	PS	-	-	-	-	Air	A	33,350	25,000	100	52	22	32	100	84
Comm.	JF601	105	2,200	6	Cont.	M-363	98	2,200	6	TC	M-363	98	2,200	6	Hyd.	A-R	15,650	-	-	-	-	-	-	85
Comm.	JF601	110	2,200	6	Cont.	M-363	105	2,200	6	TC	M-363	105	2,200	6	Hyd.	A-R	20,400	-	-	-	-	-	-	86
GM <sup>(4)</sup>	3-53	80	2,500	3	1H.	UD-240	105	2,500	6	PS	UD-240	105	2,500	6	Hyd.	A-R	13,000	9,100	25	5	6	24	92	87
GM <sup>(4)</sup>	3-53	80	2,500	3	1H.	UD-240	117	2,500	6	PS	UD-240	117	2,500	6	Hyd.	A-R	15,400	10,800	25	5	12	24	96	88
GM <sup>(4)</sup>	3-71	105	2,500	3	Herc.	GO-290	96	2,200	6	PS	GO-290	96	2,200	6	Hyd.	A-R	17,500	12,250	25	6 1/2	12	32	96	89
GM <sup>(4)</sup>	3-71	105	2,500	3	2M.B.	GO-290	108	2,200	6	PS	GO-290	108	2,200	6	Hyd.	A-R	20,000	14,000	30	6 1/2	12	39	100	90
GM <sup>(4)</sup>	4-71	147	2,200	4	1H.	U-400	150	2,500	6	PS	U-400	150	2,500	6	Hyd.	A-R	24,900	17,150	60	11 1/2	18	40	140	91
GM <sup>(4)</sup>	4-71	147	2,200	4	-	-	-	-	-	PS	-	-	-	-	Hyd.	A-R	29,500	20,000	60	11 1/2	20	40	140	92
GM <sup>(4)</sup>	WH-71	264	2,100	8	568.	-	-	-	-	PS	-	-	-	-	Air	A-R	45,000	31,500	67	14 1/2	24	56	280	93
Herc.	DOUC	65	2,200	4	225	Herc.	JX40	82	2,200	4	214	-	-	-	Hyd.	F	12,000	5,000	16	5	6	21	88	94

International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.  
 Lull Engineering Co., 3045 Highway 13, St. Paul 11, Minn.  
 Massey-Ferguson Industrial Div., Massey-Ferguson, Inc.,  
 5000 S. Blvd. Wichita 13, Kan.  
 Minneapolis-Moline Co., Hopkins, Minn.  
 H. P. Nelson Van Winkle, Inc., 600 Stonefield Ave., Chten, N. J.

The Oliver Corp., 400 W. Madison St., Chicago 6, Ill.  
 Ottawa Steel Div., Young Spring & Wire Corp., P.O. Box 39, Ottawa, Kan.  
 Pettibone Builders Corp., 4700 W. Division St., Chicago 51, Ill.  
 Waukegan Manufacturers, Inc., 8827 N.E. Killingsworth St., Portland 20, Ore.  
 The Trow Shovel Co., E. 28th St., Lorain, Ohio  
 Yale & Towne Mfg. Co., Troyan Div., Salina, N.Y.

FOR RESULTS LIKE THIS ON YOUR NEXT SHOT...

# WHICH EXPLOSIVE?

The Penn-Can Highway near New Milford, Penna., connecting the Pennsylvania Turnpike Northeast Extension with the New York Thruway. Contractors: D. A. Kessler Construction Company, Mt. Carmel, Penna. and Lycoming Construction Company, Williamsport, Pennsylvania.





Here's really-effective blasting, the kind that gets more payload service out of all your equipment. Look at the breakage . . . it is uniform and thorough. The rock is "fluffed up" into high peaks that will roll it towards the shovel. Such blasting bottoms well too, with no high spots or boom-straining undisplaced rock under the pile.

Which Explosive? In this case, Atlas AN with Giant "75" primers and Rockmaster® millisecond delay caps initiated at the bottom of 6-in. holes was the right combination for the job.

The point is, breakage, displacement and control like this don't just happen. There is a combination of explosives and blasting methods that is right for every shot. Helping you find the right combination and putting it to work is the job of

your Atlas Representative. Working with him, you'll have the advantage of his experience with the latest advances in explosives and techniques. Backed by the complete Atlas line, he can help you determine the explosives combination and the particular blasting methods that will be the most profitable for you on every shot.

There is only one way to look at explosives costs, and that is: which explosive will give you the most payload service from *all* your equipment? Our blasting cost chart, slide rules and technical literature are designed to help you do exactly that. Ask your Atlas Representative about them . . . or, write directly to:

**ATLAS POWDER COMPANY**  
Explosives Division, Wilmington 99, Del.



## ATLAS EXPLOSIVES

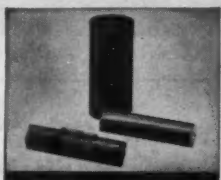
When you use the  
right combination,  
all your equipment  
moves in sooner...  
works faster...  
produces more.



**ATLAS PELLETS**, a new form of ammonium nitrate, have both the density and sensitivity required for efficient ammonium nitrate blasting.



**GIANT GELATINS** are for high velocity shattering action. They are advantageous for extremes of wet work and for hard, tight shooting.



**GIANT "75" PRIMERS** have the wallop required for complete, efficient detonation of both field mixed and plant mixed blasting agents.



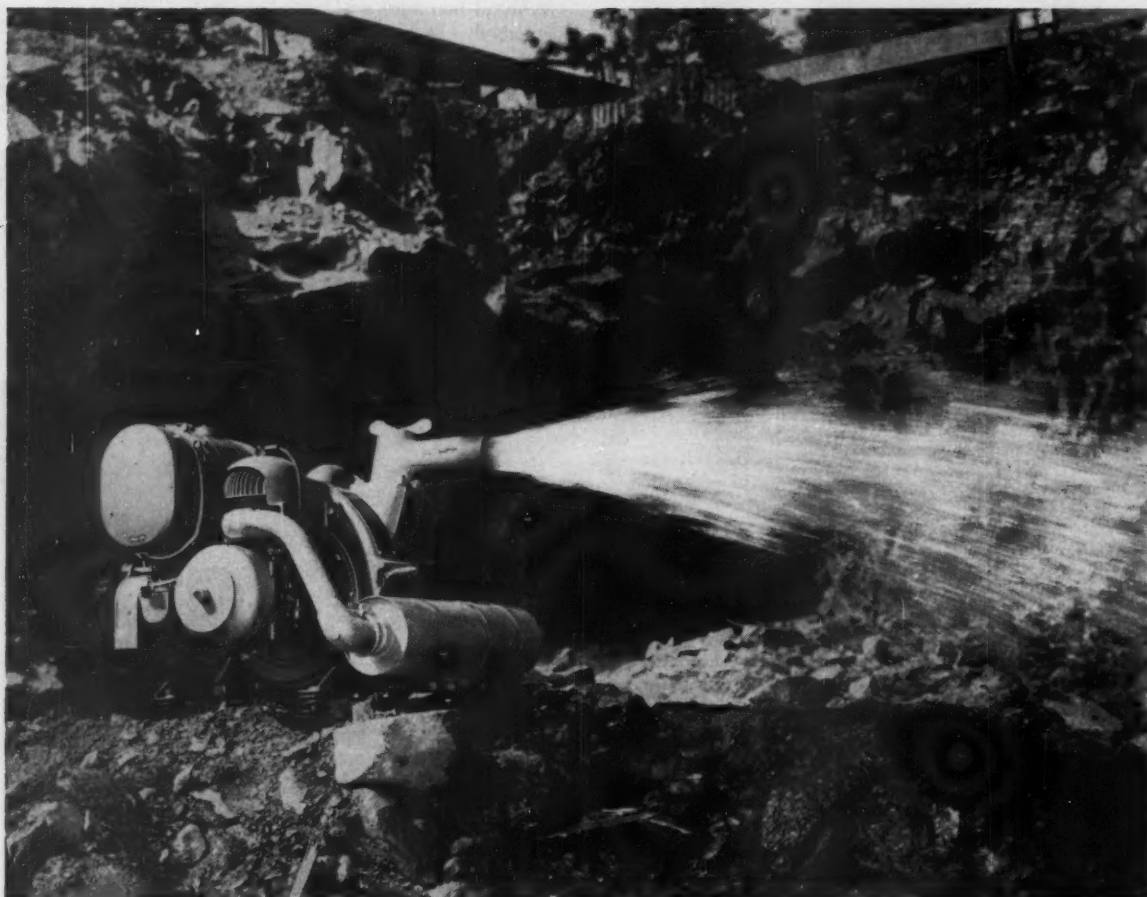
**ROCKMASTER®** electric blasting caps achieve the staggered action which has been so important in producing better breakage and control.

# The New Pump That's Making News

Everyone who has seen it in action is talking about it. It's the new Homelite 2" Centrifugal Pump . . . a pump that mates action with quality. It has the works. Light and compact. Weighs only 69 pounds. One man can pick it up, carry it and put it in action anyplace . . . close to your dewatering problems. Handles 10,000 gallons per hour. Self priming, of course, with guaranteed 28 foot

lift. In addition to all well-known Homelite features you'll find a new ceramic-coated seal that lasts up to 25 times longer plus an optional automatic idle control. Two models available . . . one with slow speed for fuel and maintenance economy, the other with standard speed for higher heads.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES



**EXTRA!  
EXTRA!**

## NEW AUTOMATIC IDLE CONTROL

The latest news-maker from Homelite is the control accessory that automatically idles engine when water level drops below strainer. Brings engine up to full pumping speed as water level rises. With pump working only when needed you save fuel, maintenance and labor costs. Ask for a demonstration.



Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

**HOMELITE**  
CARRYABLE  
PUMPS GENERATORS • BLOWERS  
CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC., 1010 RIVERDALE AVE., PORT CHESTER, N. Y.

# Men in the News . . .

## Dravo



F. J. LARKIN is the new general superintendent of plant for Dravo Corp.'s Contracting Div. He will supervise its multi-million dollar equipment used in construction projects throughout the U.S.

A graduate of the University of Alabama, Larkin joined Dravo in 1934 and has since served in various supervisory capacities. Before his promotion, he was plant and research engineer. During World War II he served with the Corps of Engineers.

## Kaiser Engineers

FRANKLIN T. MATTHIAS is the newly-appointed manager of heavy construction for Kaiser Engineers. In his new capacity he will head the company's projects in the U. S. and Canada.

Matthias previously was chief engineer and director of engineering and construction for the Aluminum Co. of Canada, Ltd. He was responsible for the \$150-million Chute-des-Passes hydroelectric project in Quebec. Earlier, he was assistant project manager for the Kemane-Kittimat project, also in Canada.

During World War II, Matthias was a colonel in the Corps of Engineers. He served as officer-in-charge of construction and commanding officer of the atomic bomb works at Hanford, Wash. He was awarded the Distinguished Service Medal for his service with this project.

## Turner

WALTER B. SHAW, vice president of Turner Construction Co., is the new director of Turner's Chicago office, replacing Clinton N. Hernandez, who has retired. Shaw joined Turner in 1941, and has been a contract manager in New York since 1954.

## Isbell

EDWARD L. PINE, formerly a state highway engineer for Nevada, is the new president and general manager of Isbell Construction Co. of Reno, Nevada.

The firm also announces four other executive promotions. HENRY ISBELL is now vice president in charge of Nevada construction operations, and FURMAN BYARS assumes the duties of vice president in charge of Arizona operations. JOHN ISBELL becomes vice president in charge of planning, and E. F. DUERR becomes secretary-treasurer.

The realignment results from the retirement of four Isbell brothers: C. V., president; W. J., vice president; Roy S., secretary, and Guy V., treasurer.

## Rutherford

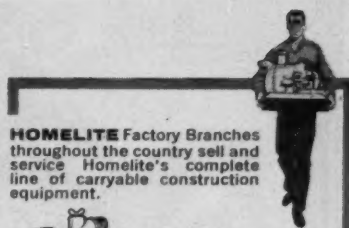
Four Cleveland construction men have acquired the assets of the George A. Rutherford Co. of Cleveland and plan to expand its operations. ALBERT A. HUTTON is the new president of the firm, which will be known as George A. Rutherford, Inc.

Other members of the group are three long-time Rutherford employees: ARTHUR J. COBURN, III, is the executive vice president and treasurer; EDWARD E. JOHNSON is vice president, construction; and ROBERT C. PREISEL is assistant vice president.

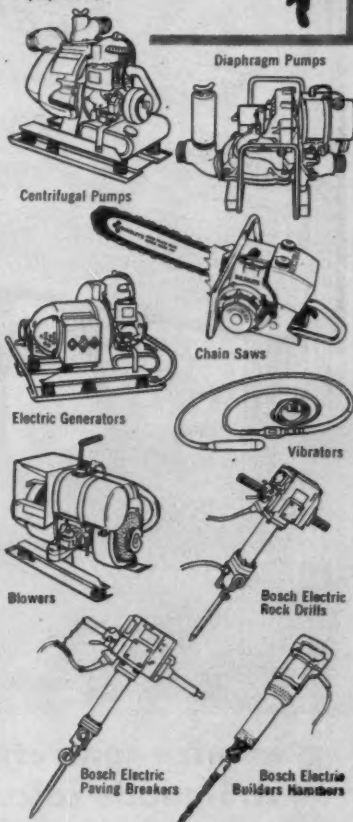
Hutton previously had been associated with another Cleveland firm, Sam W. Emerson Co., for 19 years.

## Mid-Valley

WILLIAM OPPEL, JR., is now construction manager of Mid-Valley, Inc., of Houston, Tex., a national firm of industrial builders and engineers. Oppel has been associated with the firm since 1959.



**HOMELITE** Factory Branches throughout the country sell and service Homelite's complete line of carryable construction equipment.



## HOMELITE FACTORY BRANCHES

**EAST:** CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

**SOUTH:** GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

**MID-WEST:** ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

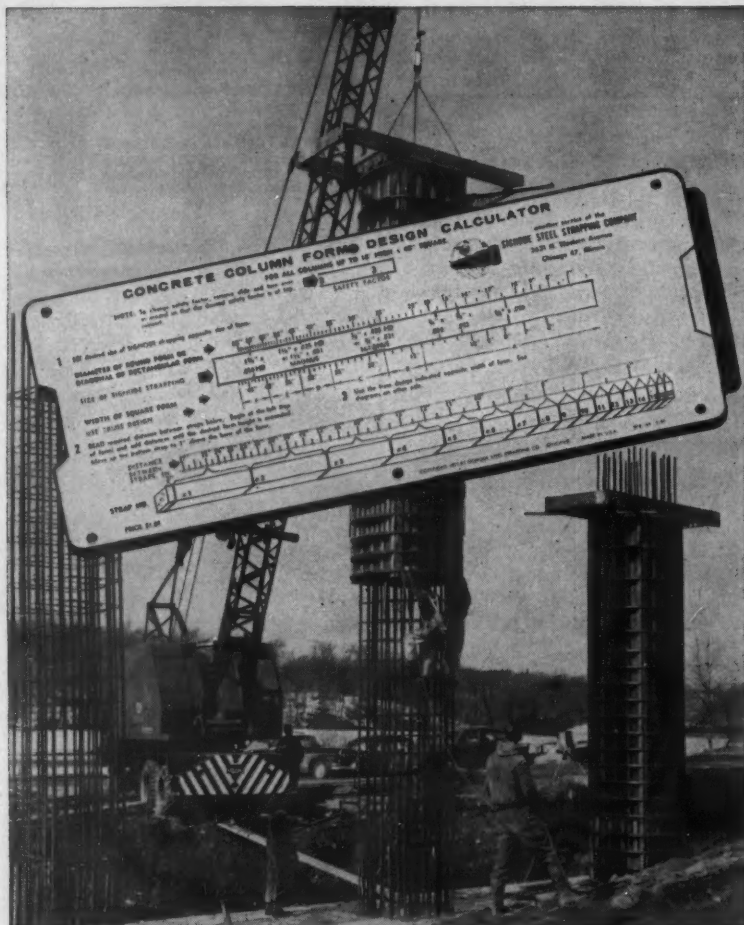
**WEST:** CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

## HOMELITE

A DIVISION OF TETRON INC.  
1010 Riverdale Ave., Port Chester, New York

In Canada:  
TERRY MACHINERY CO. LTD.





## Minimize concrete column form costs ...Signode calculator shows how

The cost of designing, building and stripping concrete forms is a large factor in concrete construction costs. Now, you can reduce these costs sharply by using Signode's standardized column form designs. You save in these ways: by using proved simplified form designs; by faster assembly of forms; by faster stripping and less finishing time; by prefabrication in the horizontal; by needing only one man in most cases—Signode tools are designed for a single operator to work efficiently.

Signode's Calculator speeds column form design. It condenses strap size and spacing data for forms up to 65" diagonal or diameter and offers an option of safety factors up to 5. Six tested truss designs are shown.

A limited supply restricts these handy calculators to architects, contractors and engineers. The nominal charge of \$1.00 assures prompt shipment of your calculator. Send your dollar now.



### SIGNODE STEEL STRAPPING CO.

2686 N. Western Avenue, Chicago 47, Illinois  
Offices Coast to Coast:  
Foreign Subsidiaries and Distributors World-Wide  
In Canada: Canadian Steel Strapping Co., Ltd., Montreal-Toronto

Circle 134 on Reader Service Card

## Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.

### Distributor Appointments

**The Owen Bucket Co.:** The following distributors for Owen clamshell buckets and grapples have been announced: Euclid-Tennessee, of Nashville; T. E. Potts Equipment Co. of Buffalo, N. Y.; and Mussels Canada Limited of Montreal, Canada.

**Gar Wood Industries, Inc.:** L. B. Smith, Inc., of Philadelphia has been appointed distributor of the complete line of Gar Wood-Buckeye ditchers, finegraders, and spreaders.

**Miller Swivel Products:** Distribution of Miller products now is being handled by the Colorado Fuel and Iron Corp. The product line includes ball bearing swivels, headache balls, insulator links, taglines, and blocks.

**Baldwin-Lima-Hamilton Corp.:** The Construction Equipment Div. has appointed the following distributors: Eastcoast Equipment Co. of Mountainside, N. J.; Construction Equipment Co. of Epsom, N. H.; Atlantic Equipment Co. of Savannah, Ga.; Story Brothers, of Knoxville, Tenn.; and Contractors Machinery Co. of Grand Rapids, Mich.

**Worthington Corp.:** The following distributors have been appointed: Barrett-Haentjens Sales Co. of Hazelton, Pa.; Bell Compressor Rental Co. of Washington, D. C.; and Medico Industries, Inc. of Pittston, Pa.

### On the Sales Front

**Quick-Way Truck Shovel Co.:** Robert G. Larsen, formerly Northeastern States district representative, has been promoted to Western district representative to supervise Quick-Way distribution in the seven Western states and British Columbia. Reuel M. Hanks, formerly Western States

CONSTRUCTION METHODS

district representative, has been promoted to Southwest district representative.

**American-Marietta Co.:** W. H. Mathys has been appointed engineering product manager for soils compaction equipment built by the company's Construction Equipment Div.

**Food Machinery & Chemical Corp.** Walter Eichelberger has been appointed sales engineer for Form-Crete steel forms. His territory will consist of Georgia, Florida, South Carolina, Alabama, and the Caribbean area. He will make his headquarters at the Lakeland, Fla., office.

**Cummins Engine Co.:** C. R. Boll has been appointed executive vice president—marketing, and R. W. Franck has been appointed vice president—sales.

**Shunk Mfg. Co.:** B. F. (Bud) Smith, who has served as eastern regional manager for the past three years, has been appointed sales manager of the company. L. I. Efaw has been named assistant sales manager.

**Allis-Chalmers Mfg. Co.:** The Construction Machinery Div. has reorganized its sales setup from two regions with six branch offices each, to six sales regions with two branch offices each. H. T. Larmore has been appointed to the newly created position of general products manager of the division. Regional managers are as follows: J. M. Haile, Northwest; G. E. Hall, Eastern; A. L. Lowery, Central; L. D. Myers, Southern; K. A. New, Northeast; and J. T. Skinner, Western.

**Minneapolis-Moline Co.:** Bert F. Whitbread, formerly eastern division sales manager of the J. I. Case Co., has been appointed manager of the newly organized construction equipment division of Minneapolis-Moline.

**Duff-Norton Co.:** Donald J. Wallace has been appointed district sales manager in Chicago for the Coffing Hoist Div.

**Master Builders Co.:** Albert R. Lesbirel has been appointed sales representative in the Miami office. David M. Burke has been named sales representative in the Pittsburgh office.

*continued on page 137*

## SIMPLICITY in the Heart of the Modern Diesel Engine

**Simple**—Only 8" long, 3¼" wide, 5½" high . . . weighs less than 10 pounds . . . fewer parts to service, fewer adjustments to make.

**Versatile**—Because of accessories that can be built in or added at low cost taking up no, or very little, valuable engine block space.

**Economical**—Initial cost is less, costs less to service, saves money because of its dependable service.

*Write for guides to better fuel injection. One features the pump, the other an efficient, economical filter.*



Circle 135 on Reader Service Card

HARTFORD MACHINE SCREW CO., HARTFORD 2, CONN.  
Division of Standard Screw Company



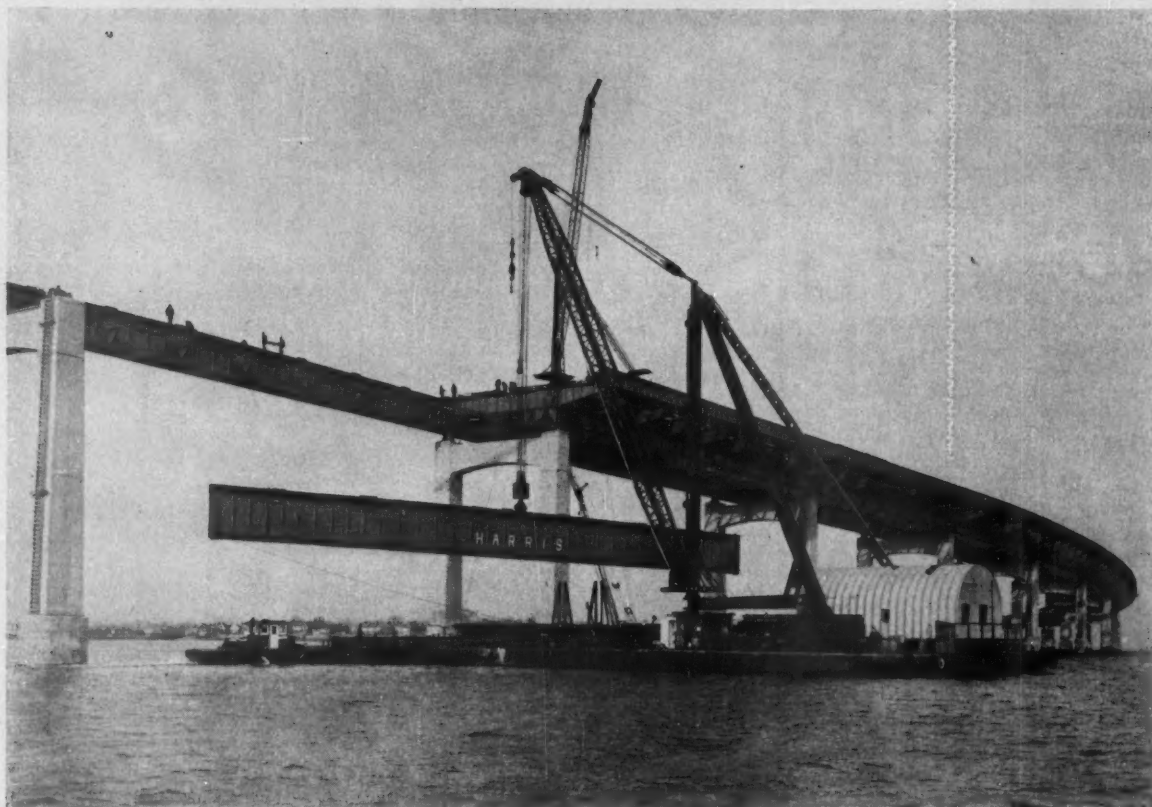
*Now...the New No. 695 Visi-flash*  
joins the famous **DIETZ** family!

- Large 5" lens with reflex reflector for added safety
- Die-cast head for greater strength, rigidity and stability
- Available with plug-in or switch type circuits

Write for details and catalog No. 55 showing the complete Dietz Visi-flash Line.

**R. E. DIETZ Company** Dept. 610 Syracuse, N. Y.

Circle 201 on Reader Service Card



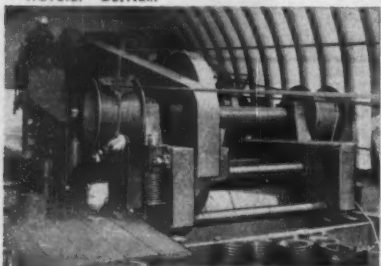
A 42,000 line pull Clyde Hoist handles a 125 ton pick for Harris Structural Steel Co., Inc., on the Bronx approach of Throgs Neck Bridge. A second Frame-12 Clyde Hoist operates traveler derrick for lifts on higher piers.

## HARRIS BUILDS BRONX APPROACH OF THROGS NECK BRIDGE WITH CLYDE



Barge mounted Clyde Hoist equipped with pony drums for vang line slewing.

Clyde hoist and swinger operating traveler derrick.



**MEN AND MACHINES** combine to accomplish difficult construction to serve man's needs. But it takes highly skilled and experienced manpower and specialized and dependable machines! Harris' use of two Clyde Frame-12 Hoists for the erection of the Bronx approach provided just such an effective combination!

**CLYDE'S 'PLUS' FEATURES** are many and varied. Two outstanding features that assure fast, safe spotting are Clyde's large diameter brakes and internal expanding band friction clutches. Both are extremely smooth in engagement and release . . . both are Clyde advantages born of over 60 years of experience in building the finest hoists made. Clyde Hoists have all steel bed and side frames, high strength spur gears, over-size anti-friction bearings . . . but why go on? The money-making, money-saving features of Clyde Hoists are endless. Why not write for Bulletin 34 and study the specs on Clyde's complete line of Hoists? There is no obligation.

**"Quality is Always Foremost  
in Clyde Hoists"**



**CLYDE IRON WORKS, Inc.**

Established 1899

DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : BUILDERS TOWERS  
UNLOADERS : CAR PULLERS : ROLLERS



## SALES AND SERVICE . . .

*continued*

**Austin Powder Co.:** James T. Edkins has been appointed sales representative in the territory of Georgia, Eastern Tennessee, North and South Carolina.

### **In the Main Office**

**Hercules Galion Products, Inc.:** Alfred Dangler, Jr., has been elected president of the company to succeed E. Paul Monroe, who is retiring after 53 years of service.

**Canadian Clark, Ltd.:** Clarence E. Killebrew has been elected president, succeeding George Spatta, who becomes chairman of the board of directors. Mr. Spatta is president of Clark Equipment Co., the parent firm. Mr. Killebrew is a vice president and a director of Clark Equipment Co. and general manager of its Construction Machinery Div. Ronald J. Smith was elected a vice president.

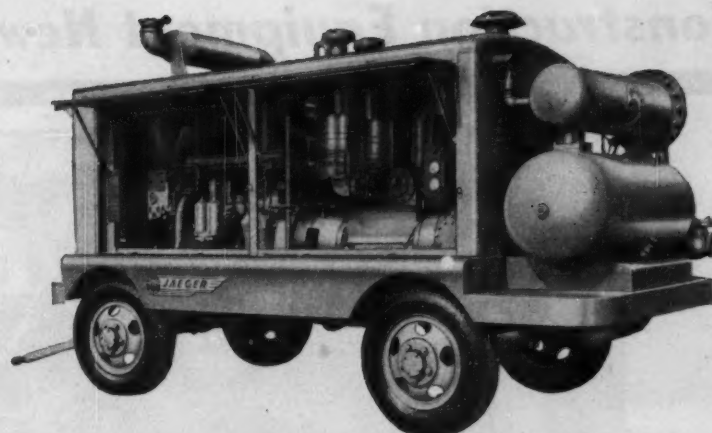
### **Associations**

**Construction Industry Manufacturers Association:** William F. Miller, vice president-sales manager of Hy-Way Heat Systems, Inc., has been elected by 17 manufacturers as chairman of the Bituminous Equipment Manufacturers Bureau, recently organized under the sponsorship of CIMA. Robert F. Plumb, assistant sales manager of Iowa Manufacturing Co., was elected vice chairman to serve with Mr. Miller.

**Concrete Joint Institute:** The Concrete Joint Institute is now the official name of the association of premolded joint manufacturers formerly known as the Expansion Joint Institute.

### **Special Mention**

**Western Machinery Co.:** Arthur G. McKee & Co. of Cleveland has purchased controlling interest in the Western Machinery Co. of San Francisco. Western will be operated as a McKee subsidiary with no changes in present management or personnel. Jack H. How will remain president. Western has four divisions: Western Knapp Engineering Co.; Wemco Division; Smith - Booth - Usher Co.; and the Industrial Sales Division. Edward R. Bacon Co., a Northern California distributor of construction equipment and an affiliate of the last division, is not involved in the transaction.



## **JAEGER "900" is the efficient rotary**

Delivers in excess of 900 cfm at a fuel-saving, engine-saving 1700 rpm, using the same GM 6-110 diesel which others operate at 1800. See your Jaeger distributor, or send for Catalog.

**THE JAEGER MACHINE CO., 800 Dublin Ave., Columbus 16, Ohio**



Circle 137 on Reader Service Card

# PLAN NOW!

**6 to 60  
ton models  
at low cost**

Plan now for delivery of your asphalt plant when YOU need it. Don't risk delayed delivery next spring. Get your share of profitable winter and early spring business! Send for free catalog.



## **White asphalt plants**

White Mfg. Co., Elkhart 6, Indiana  
Please send catalogs on low-cost asphalt plants.

Name   
Address   
City  State

Circle 202 on Reader Service Card

# Construction Equipment News...

For more information on any item, circle the key number, found at the end of each item, on the READER SERVICE CARD just inside the back cover.



## Tractor Shovel Offers Choice of Engines

The 922 wheel-mounted Traxcavator handles a  $1\frac{1}{2}$ -yd bucket and is powered by an 80-hp engine. It can be either a 4-cyl diesel or a 6-cyl gasoline unit. The gasoline engine comes with a 12-v electrical system, while a 24-v system is standard on the diesel.

This rig develops a breakout force of 13,700 lb. Its lifting height is 12 ft 2 in., and the turning radius is 20 ft 4 in. Other features include four-wheel drive, a two-speed power shift transmission, and a torque converter. Top speed is 19 mph in forward and 24 mph in reverse.—Caterpillar Tractor Co., Peoria, Ill.

Circle 301 on Reader Service Card

## Maintenance Tool Simplifies Tire Changing

Breaking the bead when changing truck tires is easy with the Break-Safe truck tire demounter. The tool consists of a conical base, a spider assembly made up of four cross arms, a screw shaft and handle, and two sets of pressure pads.

To break a bead, the wheel is seated on the conical base, and the pads are positioned to maintain uniform pressure along the bead. Rotation of the handle breaks the bead. Break-Safe also can be used as a safety device when inflating tires because it can control the pressure on the bead and lock ring.—Par Sales Co., Inc., 1647 N. Gower St., Hollywood 28, Calif.

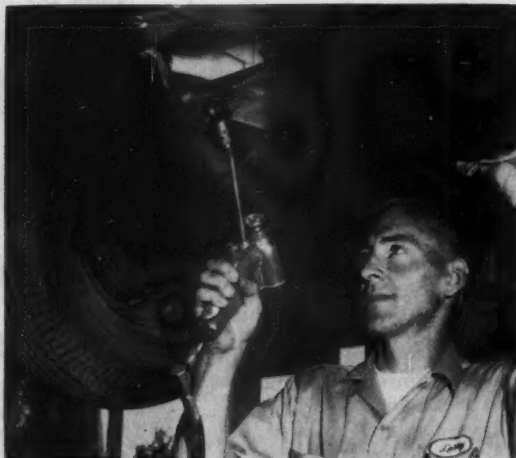
Circle 302 on Reader Service Card

## Grease Gun Carries Own Light

Maintenance men servicing dark, hard-to-get-at components on equipment now can buy a handy gadget that is a combination high-pressure grease gun and light. Its name is LubriLite.

Total weight of the unit is 2 lb. The light operates on flashlight batteries. A single control operates both the light and the gun. A slight finger pressure on the trigger turns on the light, and additional pressure dispenses the lubricant.—LubriLite Corp., Libby, Mont.

Circle 303 on Reader Service Card



### All Four Wheels Drive And Steer Motor Grader

The Model 502 is ninth in a line of Pettibone Mulliken motor graders. This 23,000-lb unit is powered by 106-hp GM diesel engine as standard equipment; a 123-hp GM diesel that adds 200 lb to the weight is optional.

Design features include four-wheel drive and four-wheel hydraulic power steering, a four-speed power shift transmission, torque converter, and planetary axles. A combination manual and hydraulic steering system is optional. Maximum speed is 19.1 mph in forward or 23.5 mph in reverse.

The moldboard is 12 ft long



and 24 in. high and can be side-shifted hydraulically. Also available are 13 and 14-ft moldboards. The 502 rides on 10-ply, 12.00 x 24 tires as standard equipment,

but 12 and 16-ply tires also are available. — **Pettibone Mulliken Corp., 1212 E. Dominick St., Rome, N.Y.**

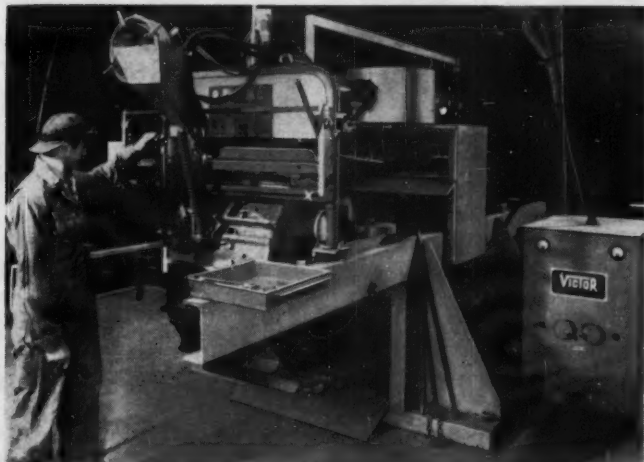
Circle 304 on Reader Service Card

### Cranes Also Handle Excavation

Crane ratings of five new Marion crawler-mounted machines range from 30 to 75 tons. Maximum lengths of boom and jib combinations are 115 to 200 ft. Model number designations for these cranes are 45-M, 47-M, 65-M, 75-M, and 77-M. The corresponding capacities are 30, 40, 50, 60, and 75 tons.

Rigged as excavators, these units can handle 1½ to 1¾-yd shovel dippers, dragline or clamshell buckets up to a capacity of 2½ yd, or hoes with a maximum capacity of 2¼ yd. Truck-mounted versions of the machines are planned for the future. — **Marion Power Shovel Co., Marion, Ohio.**

Circle 305 on Reader Service Card



### Rig Rebuilds Grouser Bars

Grousers on any length or width tractor track can be renewed automatically with the Victor grouser bar welder. This automatic unit is self-loading and handles track without disassembly.

In operation, an oxy-acetylene trimming tool first trims the grouser bar to be reconditioned. Then an air-hydraulic fixture places and holds the new bar in position for welding. This eliminates tacking. The machine uses Victor automatic continuous-coil wire for welding. Electronic controls located on a central control panel operate the rig. — **Victor Equipment Co., 844 Folsom St., San Francisco 7, Calif.**

Circle 306 on Reader Service Card

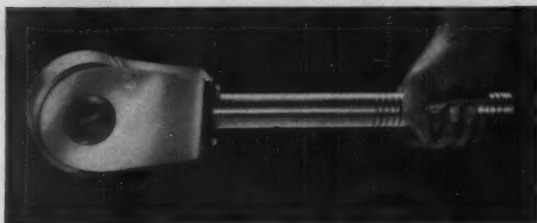


designed to solve a universal maintenance problem

## MANUAL IMPACT WRENCH—

loosens the tough nuts  
power wrenches can't budge!

# SWENCH®



Model 750—for bolts  $\frac{1}{2}$ " to  $1\frac{1}{4}$ " • Model 1000—for bolts  $\frac{3}{4}$ " to  $1\frac{1}{4}$ "  
Model 1500—for bolts  $1\frac{1}{4}$ " to  $2\frac{1}{2}$ "

- Loosens "frozen" nuts in seconds
- Tightens nuts to maximum practical tightness

SWENCH is an entirely new concept in wrench design. It is the world's only manual impact wrench.

**NEW SPEED**—Nuts that previously had to be burned off can now be "SWENCHED off"—with unbelievable ease—by one man—in a matter of minutes.

**NEW EASE**—Only SWENCH in its torque class is truly portable . . . lets you take the wrench to the job—anywhere—with no auxiliary equipment, no power connections.

**NEW SAFETY**—With SWENCH there's no back-breaking, knuckle-knocking struggle . . . no dangerous handle extensions . . . no sudden release of a frozen nut . . . no shock transmitted through the handle.

**NEW POWER**—SWENCH, size for size, gives greater—and more effective—torque than power wrenches . . . multiplies torque applied to handle over 1500% (yet all SWENCH's power is built into the wrench itself).

**NEW ECONOMY**—SWENCH saves in many ways . . . no auxiliary equipment to maintain and man, no costly upkeep on the wrench, no man-hours fighting frozen nuts—and SWENCH costs less than half as much as wrenches with comparable impact power.

**NEW VERSATILITY**—One SWENCH can handle more bolt sizes than any power wrench . . . loosening or tightening requires no special adjustments.

**NEW TENSIONING ACCURACY**—Precise tightening is assured with SWENCH, following simple instructions.

Write for further information and a quick and convincing demonstration.

*"When you're up against the tough nuts . . .*

*Don't wrench it . . . SWENCH it!"*

MARQUETTE DIVISION

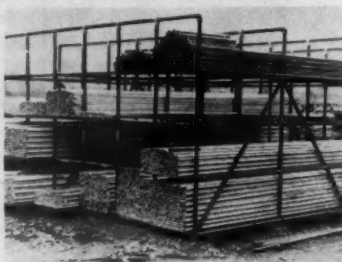
CURTISS  WRIGHT

CORPORATION • GALEWOOD DRIVE, CLEVELAND 10, OHIO

Circle 140 on Reader Service Card

## EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

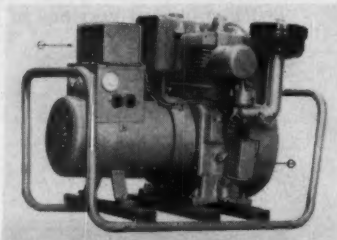


### Slip-on Pipe Fittings

Storage racks, scaffolds, and shoring can be assembled without welding, bolting, or threading when slip-on structural pipe fittings, or Kee-Klamps, are used. These are malleable iron fittings for assembling structures from pipe.

The fittings come in 58 different types for use with  $\frac{3}{8}$  to 2-in. standard or XHY pipe. Each socket is equipped with one or more cupped hex set screws that can support a vertical load of 4,000 lb. All materials are salvageable.—Gascoignes Industries, Inc., 1329 E. 289th St., Wickliffe, Ohio.

Circle 307 on Reader Service Card



### Idling Control For Electric Plants

Either single or dual voltage electric plants rated at 2,500 and 3,500 w can be equipped with an automatic device to control engine idling speed. The Economiser maintains a no-load engine speed of about 2,000 rpm, and it increases this to 3,600 rpm whenever a load is placed on the electric plant. According to the manufacturer, this increases engine life and decreases fuel consumption. — Pioneer Gen-E-Motor Corp., 5841 W. Dickens Ave., Chicago 39, Ill.

Circle 308 on Reader Service Card

CONSTRUCTION METHODS



# SEE A 2-WAY RADIO DEMONSTRATION

**Your Motorola man will show you  
a nearby system in action**

**You'll see how** radio-equipped construction vehicles and crews get *more production* out of men, minutes and machines—by coordinating operations on the site and between sites—eliminating confusion and waste motion.

**You'll see why** radio control means lower costs due to faster operation, less overtime, lower gas and oil bills.

**You'll see proof** that Motorola 2-way radio can pay for itself in a short time—then go on to build profits—and give you a definite competitive edge on both *time* and *cost* estimates when a job is up for bids.

**You'll get the full story** from the man who owns the system. Ask him about Motorola dependability—Motorola service.

Circle 141 on Reader Service Card

**MAIL THIS COUPON TODAY!  
NATURALLY THERE'S NO OBLIGATION**



## MOTOROLA

### 2-WAY RADIO

Motorola Communications & Electronics, Inc.

A Subsidiary of Motorola Inc., 4501 Augusta Blvd., Chicago 51, Illinois

☐ **YES, I want a demonstration,**  
have your man call me for an appointment.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY NAME \_\_\_\_\_

TELEPHONE NUMBER \_\_\_\_\_

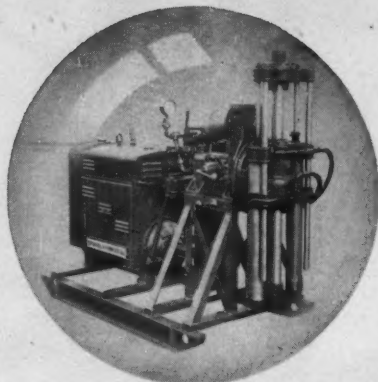
ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



## CORE DRILL MACHINE

- LIGHT
- COMPACT
- PORTABLE
- VERSATILE



- The ideal machine for foundation investigation and shallow mineral exploration.
- Available with either screwfeed or hydraulic swivel-heads with or without built-in water pump and a wide choice of power units.
- Unit can be skid, truck, or trailer mounted.
- The Model 30 is a quality machine produced by a quality manufacturer.

*Look for our emblem...It's your Seal of Quality*

**SPRAGUE & HENWOOD, Inc.**  
**SCRANTON 2, PA.**



MEMBER OF: DIAMOND CORE DRILL MANUFACTURERS ASSOC.

New York—Philadelphia—Nashville—Pittsburgh—Grand Junction, Colo.—Buchans, Nfld.

Export Division: Sprague & Henwood International Corporation, 11 W. 42nd St., New York, N. Y.

Circle 142 on Reader Service Card



## **MONARCH** power hydraulic controls lift and lower snow plows automatically!

Be sure your equipment is equipped with Monarch units — makes snow removal jobs faster, easier, more economical. One man controls the plow right from the cab... instant up-and-down action with the flick of a wrist. A Monarch control can be quickly installed. See your dealer. Send for free folder today.



**MONARCH ROAD MACHINERY COMPANY**  
 1331 Michigan St., N.E. Grand Rapids 3, Michigan, U.S.A.

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## EQUIPMENT NEWS...

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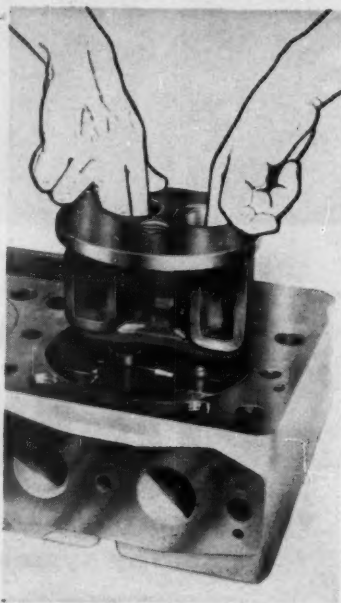


### Expandable Trailer

A trailer with a telescoping platform can handle general purpose transportation tasks or haul extra-long loads when necessary. It is 35 ft long in the closed position and measures 55 ft when fully extended.

Rated capacity in the closed position is 50,000 lb for concentrated loads. But this varies as the platform length is increased.—**Fruehauf Trailer Co., Detroit 32, Mich.**

Circle 309 on Reader Service Card



### Improved Design For Cylinder Heads

Valve grinding between engine overhauls will no longer be necessary. At least that's what the designers of the Stres-Fre cylinder head claim.

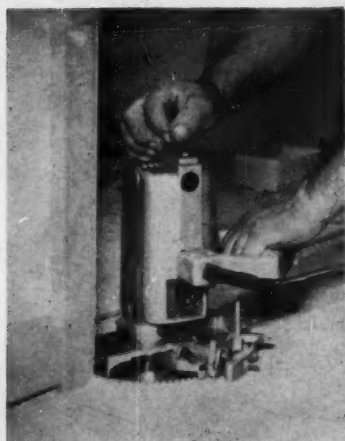
The head is said to eliminate loss of engine efficiency and horsepower due to hot spots. These are combustion zones around each cylinder head that tend to expand



during operation. But the surrounding metal is water cooled and prevents sufficient expansion of the metal in the combustion zones. And the hot spots must find a weak area to relieve the expansion pressure. The valve seat area is one such weak spot. It becomes distorted and causes loss of compression, efficiency and horsepower. This happens even when the engine operates under ideal conditions.

Stres-Fre heads combat hot spots by providing a 0.030-in. separation between the fast-expanding hot spots and the slower-expanding area of the cylinder head casting. The hot spot zone can expand without resistance from the surrounding area eliminating strains and stresses on the valve seats and other parts.—**Stancliff Engineering, Inc.**, 1001 22nd St., Bakersfield, Calif.

Circle 310 on Reader Service Card



#### Electric Saw Cuts Corners

There's no nut and collar to hold the blade in position and it lays flat on the floor. This permits inside corner undercutting at 90 deg. The Flex-Saw is handy for undercutting walls and door frames to permit installation of linoleum and floor tile. Also, it can be used to make flashing grooves in stone, concrete block, brick, or concrete walls.

In a vertical position the saw cuts 2 1/4 in. deep. But at 45 deg, unlike other saws, the depth of cut the Flex-Saw makes increases to 3 in. A 1-hp electric motor powers the 13 1/2-lb saw. The blade speed is 4,700 rpm.—**Algo Specialties, Inc.**, 210 E. Chicago St., Algonquin, Ill.

Circle 311 on Reader Service Card

## PAYLOADER® tractor-shovels



### —a good combination for locks, too

Building the Captain Anthony Meldahl Locks on the Ohio River east of Cincinnati requires big, special purpose machines to handle the millions of yards of earth and materials and tons of steel involved. But the contractor, Groves Ventures Co., also needs and uses many pieces of smaller, more mobile, more versatile equipment.

Examples of the latter are several "PAYLOADER" tractor-shovels on the project. One of these is about 10 years old and has been on many Groves contracts. It is lowered into barges to help the big clamshell unload aggregate. The other more modern units work all over the job—cleaning up, carrying and skidding equipment, loading wagons and trucks,

feeding conveyors and doing many other chores.

Project Manager, Joe Green says, "PAYLOADER" tractor-shovels have been active and valued members of our equipment team ever since the beginning of this project. Whatever and wherever the job, we've found them dependable—and Hough Distributors always available for speedy service."

Whatever and wherever your work may be—locks, dams, buildings, bridges or highways . . . or sewer, water or gas lines—there's a "PAYLOADER" size, up to 12,000 lbs. operating capacity, to fit your needs. There will also be a dependable Hough Distributor to keep your "PAYLOADER" investment profitable.

# HOUGH®

THE FRANK G. HOUGH CO.  
706 Sunnyside Avenue  
Libertyville, Illinois



SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Send data on "PAYLOADER" models and the many attachments

10-B-2

## NEW SCHRAMM C-42 CRAWLER ROTADRILL SLASHES ROCK REMOVAL COSTS!

**1** you get a completely self-contained, self-powered crawler unit... with air compressor built in

*one man drills and drives*



**2** you cut cost of:

*separate wagon drill and compressor*



*one or two extra men*



**3** with a Rotatool  you get:

*blow at bottom of hole*



*deeper, faster penetration*

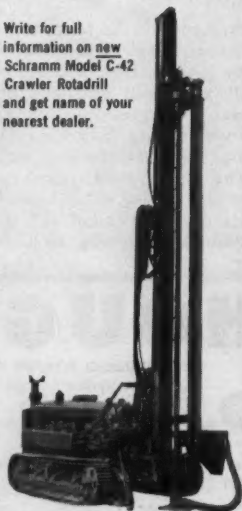


*lower cost per cubic yard removed!*

**4** compare:

	MODEL C-42 ROTADRILL	CRAWLER WAGON DRILL
Air required	250 cfm	600 cfm
Hole size	4½"	4½"
Drill steel size	3¾"	2"
Equipment cost	\$29,825.	\$16,200 for crawler wagon drill \$18,545 for 600 cfm compressor \$34,745 total
Men needed	One	2 or 3

Write for full information on new Schramm Model C-42 Crawler Rotadrill and get name of your nearest dealer.

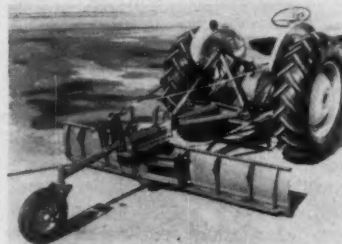


**Schramm**

ROTADRILLS AND ROTATOOLS  
604 North Garfield Ave., West Chester, Pa.

## EQUIPMENT NEWS...

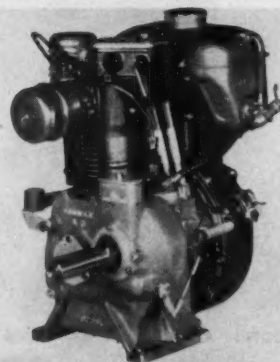
For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



### Tractor Attachment Handles Grading Jobs

Wheel tractors with three-point implement linkage systems can mount a 6 or 8-ft grader blade that can be angled, offset, or tilted from the operator's seat. The unit's frame is built of steel tubing, and the blade is reinforced by a shaped steel plate.—Tractor and Implement Div., Ford Motor Co., Birmingham, Mich.

Circle 312 on Reader Service Card



### Air-Cooled Diesel Engines

Portable equipment such as pumps and generators now can be powered by small air-cooled diesel engines with ratings from 2 to 4½ bhp. These are Japanese imports manufactured to U.S. standards for the American market. The single-cylinder, four-cycle units operate at speeds from 2,000 to 3,000 rpm and are available with crankshaft or half-speed camshaft drives.

Similar small engines are available in water-cooled versions. These deliver up to 8 bhp at 2,000 rpm. — Continental Machinery Corp., P.O. Box 5309, Long Beach 5, Calif.

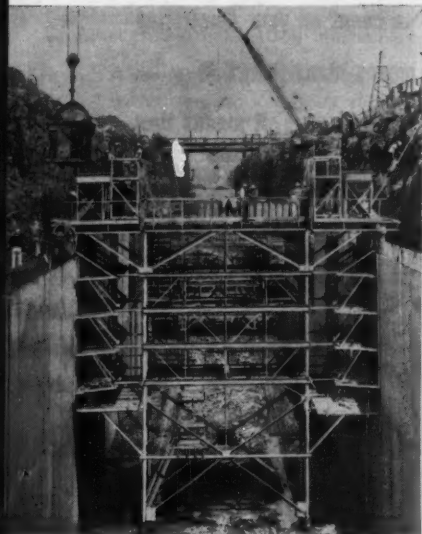
Circle 313 on Reader Service Card

CONSTRUCTION METHODS



Arch-placed concrete has a 23-ft. radius, varies in thickness from 4½-ft. at crown to 6-ft. at abutments. Abutment-positioned hinges have a 15-in. radius. Crown hinge radius is 12-in. Compressible filler near hinges allows rotation and opening and closing of outside concrete faces.

## Blaw-Knox Steel Forms shape five miles of twin conduits at Niagara Power Development



Three contractors are building twin conduits 22,600 feet long, 46 feet wide and 66 feet high. All three use especially designed Blaw-Knox Steel Forms to place a total of 1½ million cubic yards of concrete.

The flexible conduit will permit arch loads to carry into rock through abutments. Steel rods anchor slab and wall concrete to guard against hydraulic pressure during conduit dewatering and possible rock movement.

**Saves 35% assembly time.** Forms are assembled faster and at reduced labor cost, according to Balf-Savin and Winkelman, one of the contractors on the \$100 million conduit project. Another, Gull-DeFelice notes that only 15% of its men are needed to erect, move, set-up, and maintain Blaw-Knox Forms. And Merritt-Chapman & Scott "can always count on Blaw-Knox for quality equipment and dependable professional service."

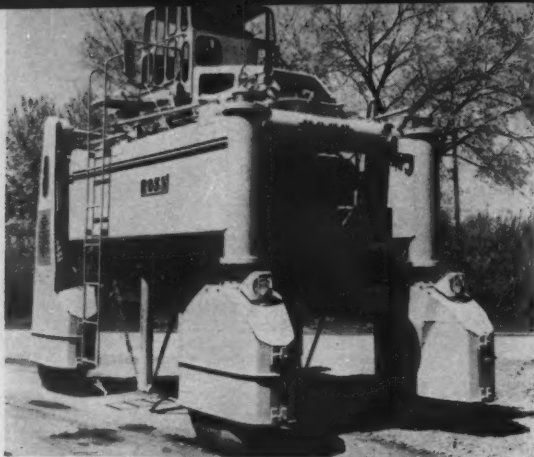
More and more contractors turn to Blaw-Knox Steel Forms Consulting Service for skilled assistance in building dams, tunnels, bridges, and other projects. Backed by 40 years of forms building, Blaw-Knox has complete facilities to fabricate forms to your needs, and to deliver them on time. For details, write Blaw-Knox Equipment Division, Pittsburgh 38, Pa., or call STerling 1-2700.

# **BLAW-KNOX**

*Steel Forms*

Circle 145 on Reader Service Card





## EQUIPMENT NEWS... continued

### Straddle Carrier Can Stack Loads

The Series 121 High Lift carrier can tier loads two or three high because of its 48-in. lift height. The rig's capacity is 60,000 lb. Standard power plant is a 6-cyl, 404-cu in. gasoline engine; a diesel unit is optional. Maximum speed when loaded is 22.2 mph with the gas engine and 20.6 mph with the diesel. The carriers can be built to order to accommodate special load sizes. — **Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.**

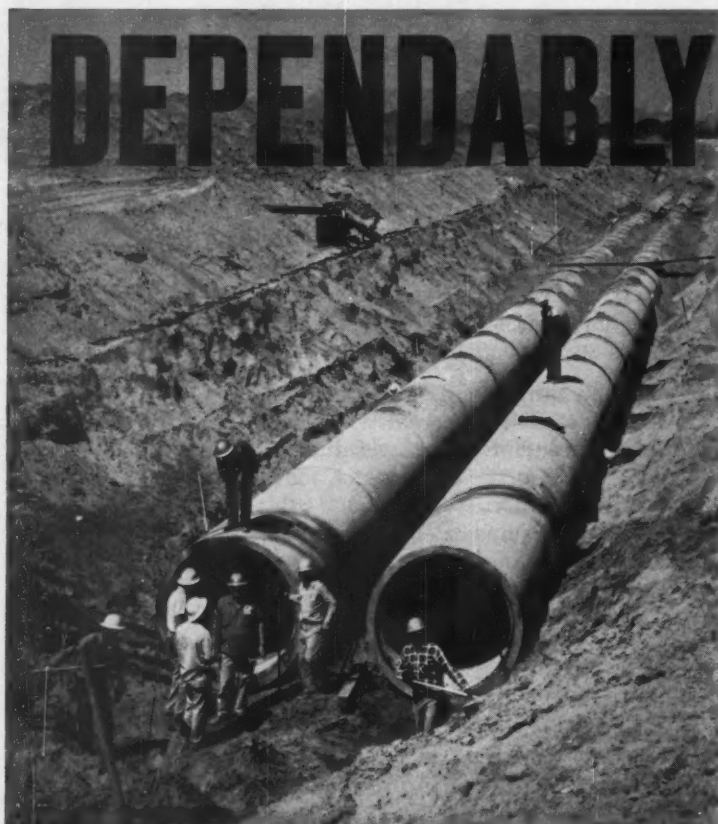
Circle 314 on Reader Service Card

### Drill's Handle Controls Operation

Operators of the Thor 330 push feed rock drill can manipulate the drill, rotate a control valve to raise the drill, and operate a push-button to lower the drill without removing their hands from the handle grip. Manual or power-retracted interchangeable feed legs are available.

No parts substitution is necessary when changing from wet to dry drilling. When required, the drill can be locked in line with the feed leg for use as a stoper for roof-bolting operations.—**Thor Power Tool Co., 175 N. State St., Aurora, Ill.**

Circle 315 on Reader Service Card



## DEPENDABLY DRY

Being able to count on your dewatering equipment means many things. It means the job well done, it means time saved, it means accurate bids, it means profit for you. Dealing with Stang, you have just such assurance: that your water-handling job, no matter where, or what type, will be done and done right — by Stang.

### JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment  
8221 Atlantic Avenue, Bell, Calif.  
Omaha • Tulsa • Minneapolis • St. Petersburg  
Mobile • Tacoma



Only Spencer uses military type underwater tests to determine the relative effectiveness of commercial explosives. These tests are the latest in a continuing research program conducted by Spencer Chemical Company, the pioneer supplier of solid ammonium nitrate as an ingredient in blasting.

Precise new underwater testing method shows . . .

## Spencer N-IV And Fuel Oil Produces Up To 7 Times As Much Useful Energy Per Dollar

. . . when compared with gelatin dynamites

How do you measure the true blasting effectiveness of commercial explosives? Unsatisfied with present methods, Spencer Chemical Company and a well known research organization teamed up to discover a better way.

After extensive investigation Spencer adopted underwater testing methods developed through military research. These were found to provide data better related to commercial blasting than any other testing method. As a result, more accurate standards of evaluating the actual useful output of explosives have been developed.

Latest test results show that Spencer N-IV Ammonium Nitrate and fuel oil deliver up to seven times as much useful energy per dollar as gelatin dynamites (see chart at right).

Extensive research has also shown that Spencer N-IV, when mixed with the recommended 6% fuel oil, delivers 20% to 25% more blast energy than equal charges of other solid ammonium nitrate-fuel oil mixtures. There are two main reasons for this: (1) lower density which provides greater ease of detonation, (2) special prill structure which allows fuel oil to be absorbed more evenly.

It costs you nothing to get the full benefits of Spencer's advanced knowledge and experience in this field. Just mail this coupon. No obligation of course.

PERFORMANCE COMPARISON OF BLASTING MATERIALS

Explosive	Heaving Energy Ft. Tons/Lb.	Shattering Energy Ft. Tons/Lb.	Effective Energy Ft. Tons/Lb.	Useful Energy Ft. Tons/\$
Spencer N-IV and Fuel Oil	423	60	483	14,230
40% Gelatin Dynamite	257	115	432	1,770
60% Gelatin Dynamite	384	84	372	1,800



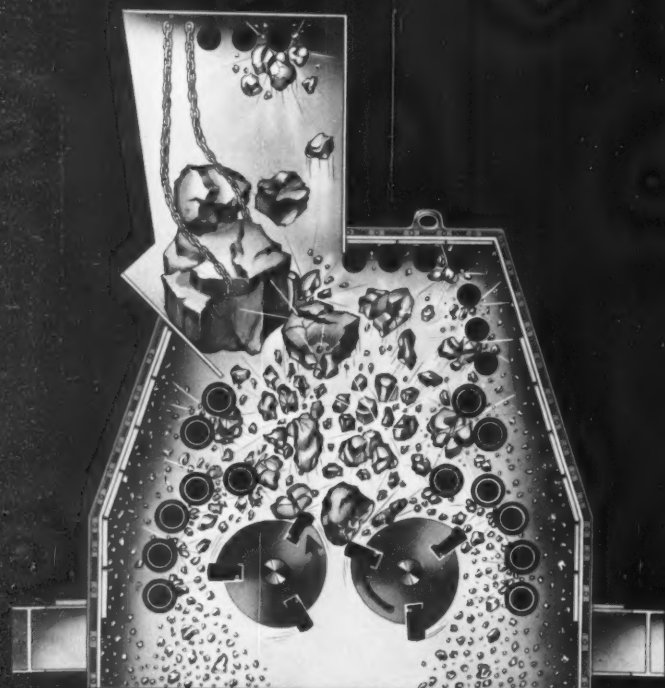
Spencer Chemical Company  
Industrial Ammonium Nitrate Sales  
409 Dwight Building • Kansas City 5, Missouri

Without cost or obligation, please send me the latest information on the use of Spencer N-IV and fuel oil for blasting.

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_



# IMPACT



Here's the Sultan of Swat when it comes to breaking rock with scientifically engineered *impact*. A Cedarapids Double Impeller Impact Breaker gets your operation out of the bush league and into the Majors in profit. It scores with high tonnage production in every inning. It up-grades the finished product into the fine cubical shape that wins the specification pennant. With its 40 or 50 to 1 reduction-ratio batting average, there's less need for pinch hitting secondary crushers. And you'll pitch more money into the bank with a low earned run average in maintenance costs.

In the clutch, drive in the winning production run with a Cedarapids Single Impeller Impact Breaker.

## This is Cedarapids' TRUE CONTROLLED IMPACT ACTION that keeps you in the competitive ballgame!

The tremendous clout delivered by the COUNTER-rotating impellers drives the rock into deep center where it smashes into incoming rock dropping rapidly from the high angle feed. With 50% of rock breaking against rock in suspension, manganese wear is sharply reduced. The *counter* rotation

of the impellers also pulls line drives right and left to the adjustable breaker bars which are strategically positioned to field the broken rock and fire the desired sizes to the discharge opening. The finished cubical specification product is the result of Cedarapids *true* impact.



# Doubles or Singles will score more productive runs when they're **CEDARAPIDS IMPACT BREAKERS**

**Cedarapids**

Built by  
IOWA

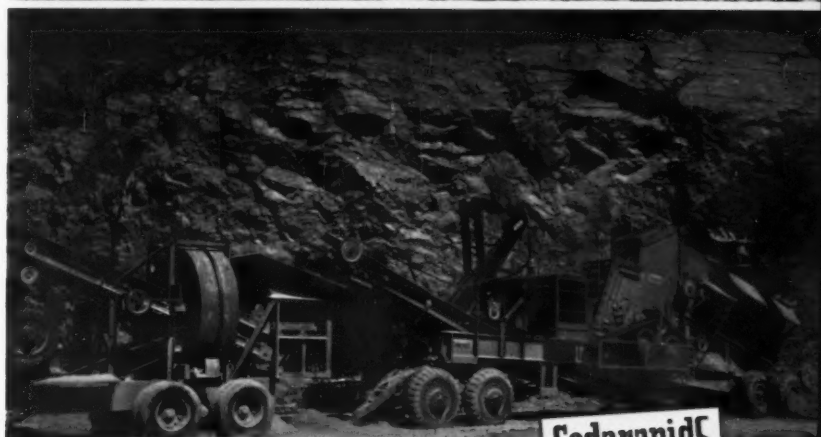
**This Double** puts profit in scoring position. It's a Cedarapids 3645 Double Impeller Impact Breaker batting around .300 in tons per hour in this stationary plant installation. Six models give you the capacity range you need.

.....

**A Single Impeller Impact Breaker** is as effective as a single to right field with the bases full for primary breaking or when conditions require an economical intermediate breaker between your primary and secondary. Two sizes available for portable or stationary application.

.....

**Fast on the base paths!** It's a 100% portable Double Impeller Impact Breaker. From your first job you can streak to second, then third . . . and slide home with the profits. Two sizes, on wheels, keep you in position to score with fewer between-job delays.



**Cedarapids**

Built by  
IOWA

**IOWA MANUFACTURING COMPANY**  
Cedar Rapids, Iowa



## Where heavyweights move job records prove... **FIRESTONE IS HAUL-ROAD CHAMPION!**

Switch to Firestones and hold downtime to a contract-meeting minimum. You can do this because Firestone off-the-highway tires are job-engineered for the toughest projects. There's a Firestone for every need on any project—and every one is built with Firestone Rubber-X, the longest-wearing rubber ever used in Firestone tires. Exclusive Firestone SHOCK-FORTIFIED nylon cord bodies guard against impact damage. And what's more, Firestone's Giant Tire Service backs up every Firestone tire—that means a Firestone Tire Expert will handle all your tire maintenance problems! Turn downtime into worktime—call your Firestone Dealer or Store today.

**ALWAYS SPECIFY FIRESTONE TIRES WHEN ORDERING NEW EQUIPMENT**

# Firestone

**BETTER RUBBER FROM START TO FINISH**



Super Rock Grip  
Wide Base\*

Super Rock Grip  
Deep Tread\*

**TUBELESS OR TUBED**

Copyright 1960, The Firestone Tire & Rubber Co.

\*Firestone T.M.

◀ Circle 149 on Reader Service Card

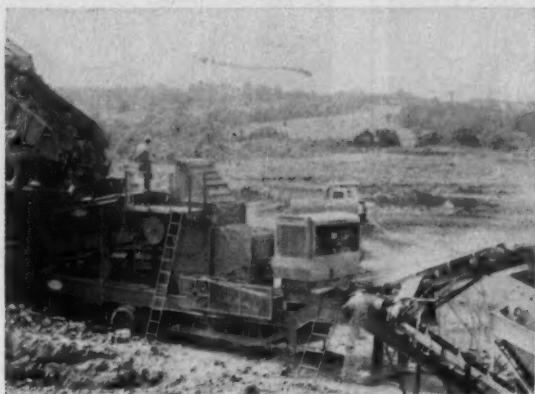
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**CONSTRUCTION METHODS**

### Hauler Works on and off-Highway

It can carry 45 tons of dirt over a good haul road at 52 mph, or it can haul legal payloads over the highway. For dumping, the C-B Earthking is equipped with air-actuated bottom dump gates operated from the driver's cab. The unit can be loaded by a stationary conveyor or shovel or on the move by a belt-loader.—Challenge-Cook Bros. Inc., Dept. 13, 3334 San Fernando Rd., Los Angeles 65, Calif.

Circle 316 on Reader Service Card



### Crusher Is Easy to Transport

Universal's Impact Master crushing plant is mounted on an I-beam, gooseneck frame with tandem axles in the rear. The front of the plant can be equipped with either trucks or a fifth wheel attachment.

The crusher features a single, two-hammer rotor. Used as a primary ahead of a roll crusher and crushing down to 1½ in. minus, the plant has averaged 230 tph.—Universal Engineering Corp., 625 "C" Ave. N.W., Cedar Rapids, Iowa.

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### HEY! YOUR SLIP IS SHOWING!

And your slip is showing, too, when your crawler tracks start spinning.

But you can restore full pulling power to your worn grousers in less than 30 minutes in the field with MARQUETTE's Tractor Strip "retread."

And you can save 30% or more — up to \$400 — of the cost of a new set of grousers by using easy-to-weld Tractor Strip. Often, it lasts longer than original grouser bars! Sizes available to fit all tracks.

Write MARQUETTE today for the name of your nearest dealer who handles Tractor Strip and the full line of MARQUETTE welders, welding accessories and battery charger-tester equipment.

# MARQUETTE

MARQUETTE MANUFACTURING COMPANY, INC.  
307 Hennepin Avenue • Minneapolis 14, Minn.

Circle 151 on Reader Service Card



# NEW MOBILE DRILL MINUTEMAN



*the first*  
**truly PORTABLE  
MULTI-PURPOSE  
ROTARY DRILL**

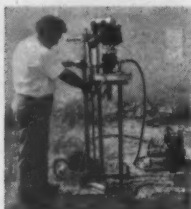
First of its kind with "big rig" rotary drive for fast, economical subsurface exploration and production drilling in soils, rock and concrete. Precision engineered of tough, high-tensile alloys for lightweight strength, easy handling and all around utility.



## READY FOR ACTION ANYTIME . . . ANYWHERE!

- Pre-bid drilling\*
- Minerals prospecting\*
- Foundation testing
- Handles standard sampling and testing tools.
- Borrow exploration\*
- Post holes
- Concrete drilling
- Horizontal boring\*
- Dewatering\*

Versatile MINUTEMAN handles augers from 3" to 12" in diameter; drives 6" diameter augers to 30' depths. Total price for MINUTEMAN Basic Auger Package . . . complete with all tools needed to auger 3" diameter holes 25' deep and handle jobs marked (\*) above . . . only \$1,485 F.O.B. Indianapolis.



◀ When equipped for core drilling, the MINUTEMAN drives EW core barrels to 200'.

▶ When equipped for concrete drilling, the MINUTEMAN extracts cores from 1" to 8" in diameter.



**MINUTEMAN features include:**  
6.5 HP engine • Twin shafts, 8-speeds  
• Diaphragm carburetor for any-angle drilling • Power or manual feed both in and out of hole • 44" continuous stroke  
• Wheel mount • Lock Grip vertical or horizontal anchoring • Easily adapted for truck or trailer mounting.

**MINUTEMAN**  
4-page brochure gives specifications, tool options and operating features. Write today for your copy . . .



## MOBILE DRILLING, INC.

Dept. 35 • 960 North Pennsylvania Street  
Indianapolis 4, Indiana, U.S.A.

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## EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

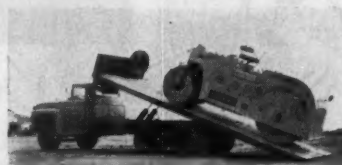


### Portable Lights

Trav-A-Lite portable lighting plants can be either trailer or skid-mounted. The units are completely self-contained and incorporate a generator, a telescoping 35-ft-long tower, and three or more flood lights. No guy wires are needed for the tower.

While traveling on the road, the tower is retracted in a horizontal position. Overall length is 20½ ft, width is 8 ft. With a 3,500-w generator and flood lights the unit weighs 2,800 lb.—**Rig-A-Lite Co., 2102 69 St., Houston 11, Texas.**

Circle 318 on Reader Service Card



### Hydraulic Ramp Hoist

Truck beds fitted with hydraulic ramp hoists can load and haul equipment weighing up to 15 tons. In operation, a hydraulic winch pulls a machine onto the truck platform which is then lowered with the ramp hoist. The truck's pto operates the winch.—**Schwartz Mfg. Co., Lester Prairie, Minn.**

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**AGAIN . . . Ford Industrial Engines are selected for outstanding performance and dependability . . .**

## **Versatile Ford-powered Hydrocrane provides 70 feet of lift with its "boardinghouse reach"**

**M**et the smooth-working Bucyrus-Erie H-5 Hydrocrane which features a hydraulically telescoping boom that allows you to "inch" 12-ton loads under wires, limbs and through apertures with precision control. Just as Ford power contributes to the effectiveness of the H-5, it can bring a new kind of efficiency to your equipment. Here's why:

**DURABILITY AND ECONOMY . . .** Ford's Short Stroke design and Deep-Block construction cut friction, vibration and wear. Overhead valves permit higher compression ratios, greater power output and make servicing easier, quicker and less costly.

**COMPACTNESS . . .** Thanks to Ford's space-saving design and advanced engineering features, *all Ford engines now develop more power per pound of engine weight than ever before possible.*

**FORD POWER IS RIGHT FOR YOUR CONSTRUCTION EQUIPMENT, TOO!**

**INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.**

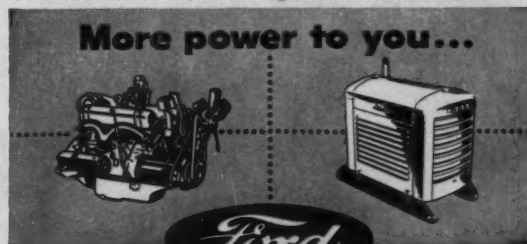
West of Rockies write to:

→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.

→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

**PARTS AND SERVICE . . .** With more than 10,000 Ford Dealerships in the U.S. alone, you can get prompt, efficient service *wherever your job takes you.*

So, to keep your profits up . . . your operating costs down, power or repower your construction equipment with a dependable Ford Industrial Engine—available from 134 to 534 cubic inches, including two economical diesels.



**Ford  
INDUSTRIAL ENGINES  
AND POWER UNITS**

# THERE'S NO EASIER DRILL TO RUN THAN A REICHdrill!

*This smooth operating, all-hydraulic rotary rig is helping REICHdrillers set higher footage records.*

In blast holing, prospecting and coring, there's no easier drill to run than a REICHdrill. And the key to money making drilling records is a simplified control "console". From it, every move required by the driller . . . every decision he makes . . . is converted smoothly, instantly, by the all-hydraulic system, into positive, time-saving performance.

Hydraulic drive to drill stem eliminates power loss . . . transmission troubles . . . kelly and rotary table.

Vari-speed Hydraulic Drill Control gives the operator the right combination of rotary speed and feed pressure for every formation . . . leveling jacks, mast raising cylinder and barrel loader are hydraulic too!

Other features: fast, easy set-ups; masts incline for angle drilling; CP heavy-duty compressors; CP Air-Blast Bits for extra footage in toughest formations. *You get more from your rotary when it's a REICHdrill!*

*T-750 truck-mounted REICHdrill. Hole size to 12"; down pressure 45,000 lbs.*

*Other models available, truck or crawler mounted, with hole size to 16 inches, down pressure to 90,000 pounds*

*For further information write:*



## REICHdrill

FRANKLIN (VENANGO COUNTY), PENN.

Division: CHICAGO PNEUMATIC TOOL CO.



*Positioned at control "console", REICHdriller has every rig maneuver in sight . . . every rig control in reach.*



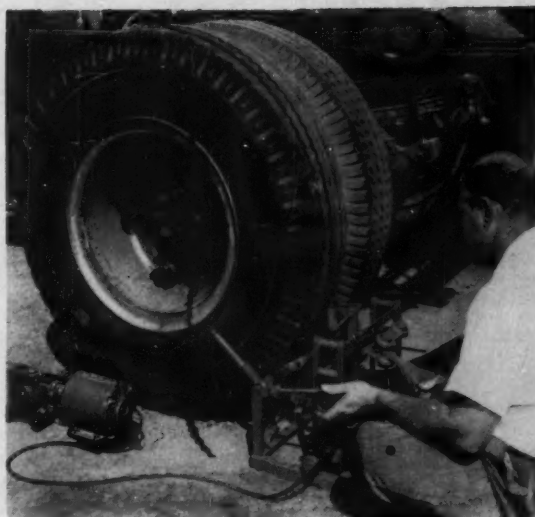


### Small Rig Regrooves Truck Tires

Two portable units make up the Honeycutt truck tire regroover. One unit incorporates an electric motor and reduction gear and turns the tire; the other—equipped with a heated blade—cuts a zig-zag pattern or straight groove in the tire.

Tires can be regrooved right on the vehicle, or they can be taken off and regrooved either mounted or unmounted. Both inner and outer dual tires can be regrooved. The unit handles any tire from 7.50 x 20 to 11.00 x 22.—Honeycutt Tool Mfg. Co., 315 Austin St., Houston 2, Tex.

Circle 320 on Reader Service Card



### Backhoe Travels at High Speed

Four-wheel drive and power steering combined with a 112-in. wheelbase mounted on 14.00 x 20 tires make this backhoe a highly maneuverable rig on the job. And when traveling between jobs it gets there in a hurry at a top speed of 50 mph.

All operations are hydraulically controlled. The 250-OX hoe is equipped with a  $\frac{3}{4}$ -yd bucket and digs 13½ ft deep. It can reach 20 ft from the pivot, swing 200 deg, and dump the bucket at a height of 11½ ft.—Hydraulic Machinery Co., Waukesha, Wis.

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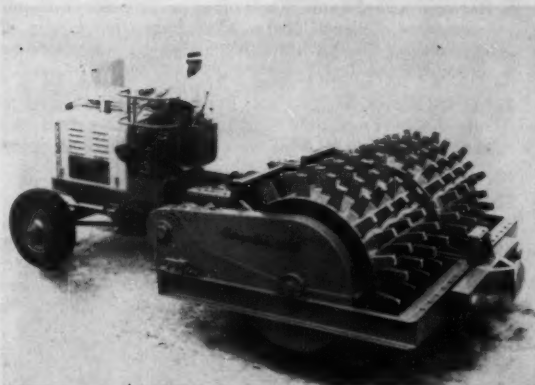


### Roller Works in Forward or Reverse

Three speeds in either direction save time on rolling operations because turning around has been eliminated. Maximum speed is about 8 mph. Two 5x5-ft drums with wedge type feet constitute the rolling assembly on the Ferguson SP-120. It exerts 372 psi pressure when empty and 550 psi when full.

Diesel power from a 125-hp GM 4-71 engine drives the roller. The drive train incorporates an Allison torque converter with a chain drive running in oil to the outer end of each drum.—Shovel Supply Co., Inc., P.O. Box 1369, Dallas 21, Tex.

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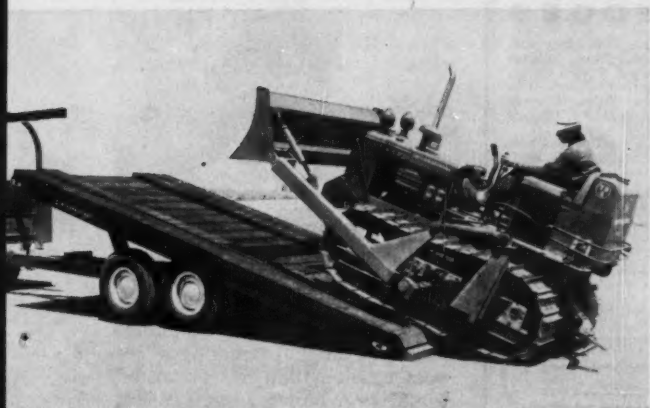


### Unique Suspension Carries Trailer

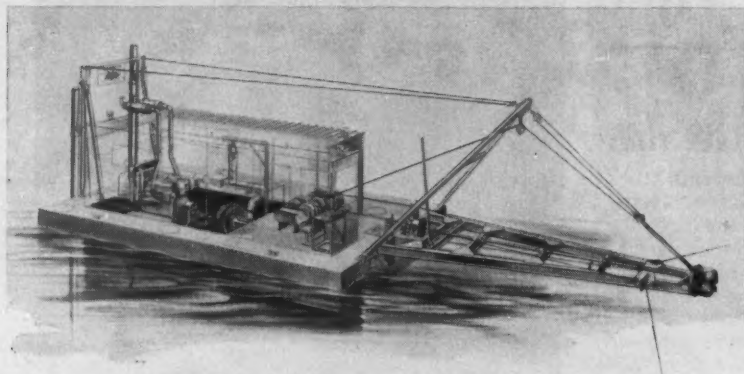
Each wheel is mounted on an independent axle that is imbedded between four rubber cushions. The cushions give the wheels independent knee action and eliminate springs, shackles or bolts, and shock absorbers. And lubrication is unnecessary.

The action of the Neidhart axle is similar to that of a torsion bar. It gives the No. 41 tilt-bed trailer a smooth ride even when passing over obstructions. The trailer's 8x17-ft platform is equipped with a hydraulic cylinder for tilting. Rated capacity of the unit is 10,000 lb.—International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Circle 323 on Reader Service Card



## The Most Advanced Dredges in Their Class



### Ellicott "Dragon"® Model Portable Dredges

#### Here's why:

1. These are dredges in which portability is a reality not a possibility. Patented 2-piece hull disassembles quickly and can be reassembled on shore or in the water. Exclusive Ellicott design places all connectors above the water, insuring against leaks.
2. All components are designed and built by Ellicott whose centralized engineering and manufacturing responsibility insures quality control.
3. "DRAGONS" are completely electro-hydraulically operated with unified controls to facilitate handling ease, lessen operator fatigue and raise outputs. *This kind of control was first introduced by Ellicott on portable dredges over 10 years ago.*
4. Because severe damage can often occur when equipment is submerged from view, Ellicott locates *all primary machinery above the water*, eliminating the downtime of costly accidents from cave-ins or debris entanglement.
5. "DRAGONS" are products of experience gained by a company which has concentrated on designing and building dredges of all types and sizes for 75 years. This know-how unequalled by any other dredge builder.

These and other exclusive Ellicott designed features spell out why today's rugged durable "DRAGONS" are recognized everywhere to be top performers as proved by their work on road construction, land reclamation, industrial pond clearance and waterway maintenance. To find out more about them, their accomplishments and how one is suitable for your construction operations, write for Bulletin 980.

Please fill in the handy coupon.



Marking Our 75th Year

#### ELLICOTT DREDGES

ELLICOTT MACHINE CORPORATION, Baltimore 30, Maryland, U.S.A.; Ellicott-Brandt, Inc., Baltimore, Maryland; Ellicott Fabricators, Inc., Baltimore, Md.; McConway & Torley Corp., Pittsburgh, Pa.; Timberland-Ellicott, Limited, Woodstock, Ontario, Canada; Dragues Ellicott France, Paris, France; Dragas Ellicott do Brasil Ltda., Rio de Janeiro, Brazil; Ellicott de Mexico, Mexico City, Mexico.

Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.

#### ELLICOTT MACHINE CORPORATION

1600 Block of Bush Street • Baltimore 30, Maryland

Send me a copy of Bulletin 980, describing "DRAGONS," "The Ultimate in Portable Dredge Engineering."

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Address

City  Zone  State  2754

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## EQUIPMENT NEWS...

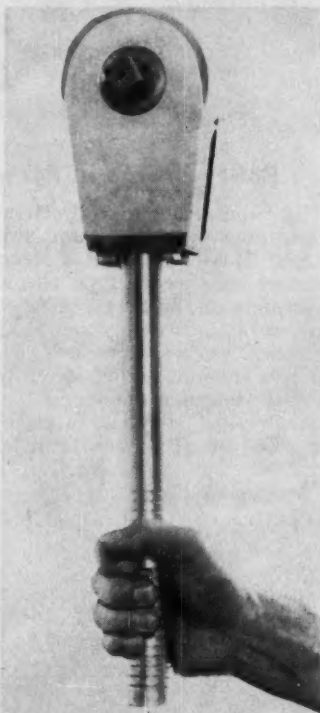
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#### Big End Dump Truck

The KW-Dart 40SL two-axle end dump truck carries a 40-ton payload. The unit is 30 ft long, 13 ft high, and 12 ft wide. A V-12 diesel engine powers it through a four-speed transmission and torque converter. Standard tires are 18.00x33 in front and rear.—**KW-Dart Truck Co. Kansas City 41, Mo.**

Circle 324 on Reader Service Card



#### Manual Impact Wrench

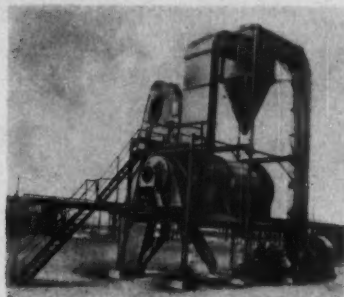
Loosening frozen nuts or accurately tensioning bolts is a simple task with a new type of wrench. It is a completely self-contained, hand-operated, ratchet-type impact wrench that delivers rotary impacts, or blows, from a spring-

actuated rotary hammer. The Swench builds up power in a spring, housed in its handle, and releases the power as torsional impact every time the handle is turned through 30 deg.

Currently, three sizes of the Swench are available. The Model 750 weighs 11 lb and is equipped with a  $\frac{3}{4}$ -in.-square drive. Maximum pull on the handle of 50 lb delivers a torque of just over 800 ft lb. Fob price of this model is \$165.

The medium-size Model 1000 costs \$245. It weighs 23 lb, has a 1-in.-square drive, and delivers 2,000 ft lb of torque at a 75-lb pull on the handle. Largest of the Swenches is the Model 1500. It weighs 78 lb and produces 7,000 ft lb of torque at a 110-lb pull on the handle fitted with an extension. This Swench has a  $1\frac{1}{2}$ -in.-square drive and costs \$795.—**Marquette Div., Curtiss-Wright Corp., 1145 Galewood Dr., Cleveland 10, Ohio.**

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#### Double-Shell Dryer

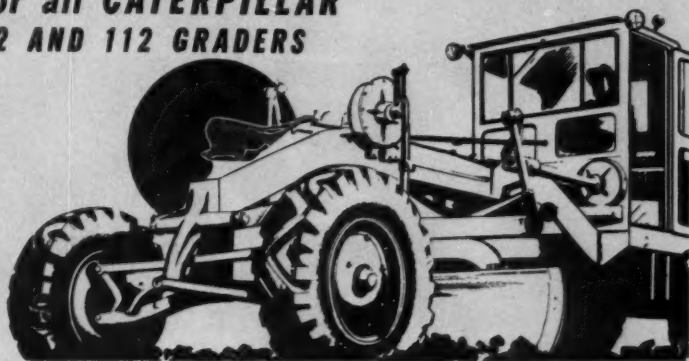
Wet, cold materials handled by this dryer enter its outer shell and progress gradually into the inner shell under continually intensifying heat. In this manner the heat generally lost by radiation is utilized to warm the incoming material. This is said to increase the unit's efficiency, decrease its fuel consumption, and reduce the exhaust temperature to as low as 180 deg F. The unit's volume is 1,018 cu ft, and it can handle up to 150 tph.

Temperature controls on the 9x16 Simplicity double-shell dryer can be manual, semi-automatic or fully automatic. The unit is standard equipment on the S-100 asphalt plant, but it can be used as a dryer for sand, gravel, stone, slag, and other materials.—**Simplicity System Co., Sholar Ave., Chattanooga 6, Tenn.**

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## POWER STEERING

for all CATERPILLAR  
12 AND 112 GRADERS



### EASY ONE-DAY INSTALLATION

Not a booster unit . . . but heavy-duty, full-time hydraulic power steering that speeds work, cuts accidents and eases strain on machine and operator. Simplified design permits easy installation and maintenance.

Get the facts at your CATERPILLAR Distributor or write:

**R. H. SHEPPARD CO., INC. • HANOVER, PA.**

Sheppard Power Steering is original equipment on many models of Brockway and Mack Trucks, Koehring Dumpsters, Allis-Chalmers Graders, Huber Warco Maintainers and many others.

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## CUTTING POWER!

### Doors Through 18-inch Walls



How do you cut doors and windows through 18-inch reinforced concrete walls without ruinous delays? A general contractor got the job done and out of the way with Longyear diamond drilling equipment. *Workmen cut around the openings with 6-inch diamond bits, and carefully lifted out the giant*

slabs of concrete. The whole job was done in a few days at low cost and the entire project was kept on schedule. Your Longyear dealer can show you other diamond drilling applications that are cutting construction costs, and tell you about the new industrial diamond drills.

Adv-169



**E. J. LONGYEAR CO.**

76 S. Eighth Street  
Minneapolis 2, Minnesota  
Phone: Federal 9-7631

Please send complete information on Longyear Diamond Bits and Industrial Drills. Also the name of my nearest Longyear dealer.

NAME \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
TOWN \_\_\_\_\_ STATE \_\_\_\_\_

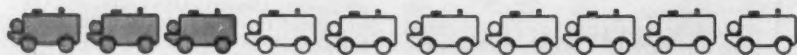
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New Blue Brute drilling team—Worthington Blue Brute 900' rotary compressor with over/under design operates two Blue Brute crawler-mounted 4½" drills.

## Why your next 900' compressor will



Most manufacturers build their small rotary compressors with end-to-end design. Only 3 out of 10 produced use over/under construction (shown in blue)...



Yet in the 900' size, more over/under units are sold than any other. The story opposite tells why...

If you looked inside every rotary compressor on the market you would find one major difference that separates the men from the boys.

A few manufacturers build their rotaries with over/under design: i.e. the compressor's second stage is directly underneath the first. This results in an improved rotary with many benefits. The cylinders are self-draining (this stops clogging) and easy to get at for repairs. All principal parts can be re-



New Blue Brute 4½" crawler drills available now  
—see your Worthington distributor for details.

## most likely have OVER/UNDER design

moved for inspection and replaced in a hurry.

The superiority of over/under design is indicated by the fact that in the largest, most expensive size (the 900' unit) more over/under rotaries are bought than any other kind. Yes, it takes over/under design to handle heavy jobs, such as operating two Worthington 4½" Blue Brute drills which get maximum drilling footage with least air consumption and less maintenance.

Worthington is one of the few manufacturers that offer over/under design in every compressor in its line. Worthington Blue Brute rotaries made with over/under design are built in 125', 210', 315', 365', 600' and 900' sizes. (A single-stage 85' rotary is also available.) There's a complete line of Blue Brute drills, too—right through the 4½" size. Ask your nearby Blue Brute distributor for a demonstration. You'll find him in the Yellow Pages under

"compressors." Or write Worthington Corporation, Dept. 60-24, Holyoke, Mass. In Canada: Worthington (Canada) Ltd., Brantford, Ontario.



Circle 159 on Reader Service Card

## More than 500 Richmond Dealers



## Supplied by 5 Richmond Plants

**Ready to bring you time and labor saving Richmond-engineered Form-Tys, Anchors, Inserts and Accessories for any kind of concrete construction.**

In addition to a line of more than 400 dependable, quality products for all phases of concrete form work and related jobs, Richmond has developed through the years a network of more than 500 dealers to service the concrete construction industry.

These dealers, supplied by five Richmond plants in the U. S. and Canada, stand ready to provide fast, continuous service no matter where your job is located or what your particular needs are.

Working in conjunction with Richmond field representatives and Richmond's Technical Department, these dealers can come up with the answer to your most difficult concreting problem.

*For Form-Tys, Anchors, Inserts and Accessories you can rely on, contact your nearest Richmond dealer...we will be glad to give you his name and information about the full line of Richmond products. Write to:-*

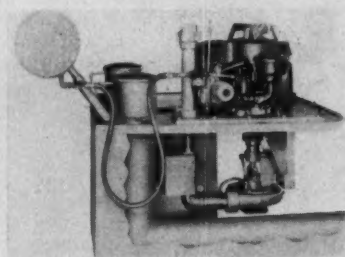


Main Office: 816-838 LIBERTY AVENUE, BROOKLYN 8, N. Y.  
Plants & Sales Offices: Atlanta, Georgia; Fort Worth, Texas; St. Joseph, Missouri. In Canada: ACROW-RICHMOND LTD., Orangeville, Ontario.

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## EQUIPMENT NEWS...

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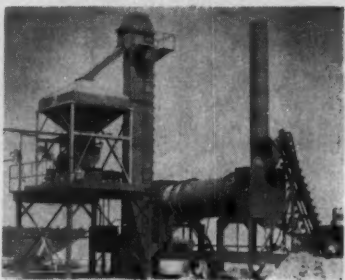
### Asphalt Pump Is Maintenance-Free

Hot bitumen dispensed by a kettle-to-roof pump also serves as the pump's lubricant and makes it self-lubricating. The bitumen is supplied to the pump's bearings under pressure.

Open-flame preheating is not needed for the Hauck pump. The hot material in the kettle both preheats and primes the pump. And constant recirculation while the engine is idling insures a uniform material on the roof. The pump delivers up to 30 gpm against a 100-ft head.

A four-cycle, air-cooled gasoline engine drives the unit. But a conversion kit for LP gas is available.—Hauck Mfg. Co., 124-36 Tenth St., Brooklyn 15, N.Y.

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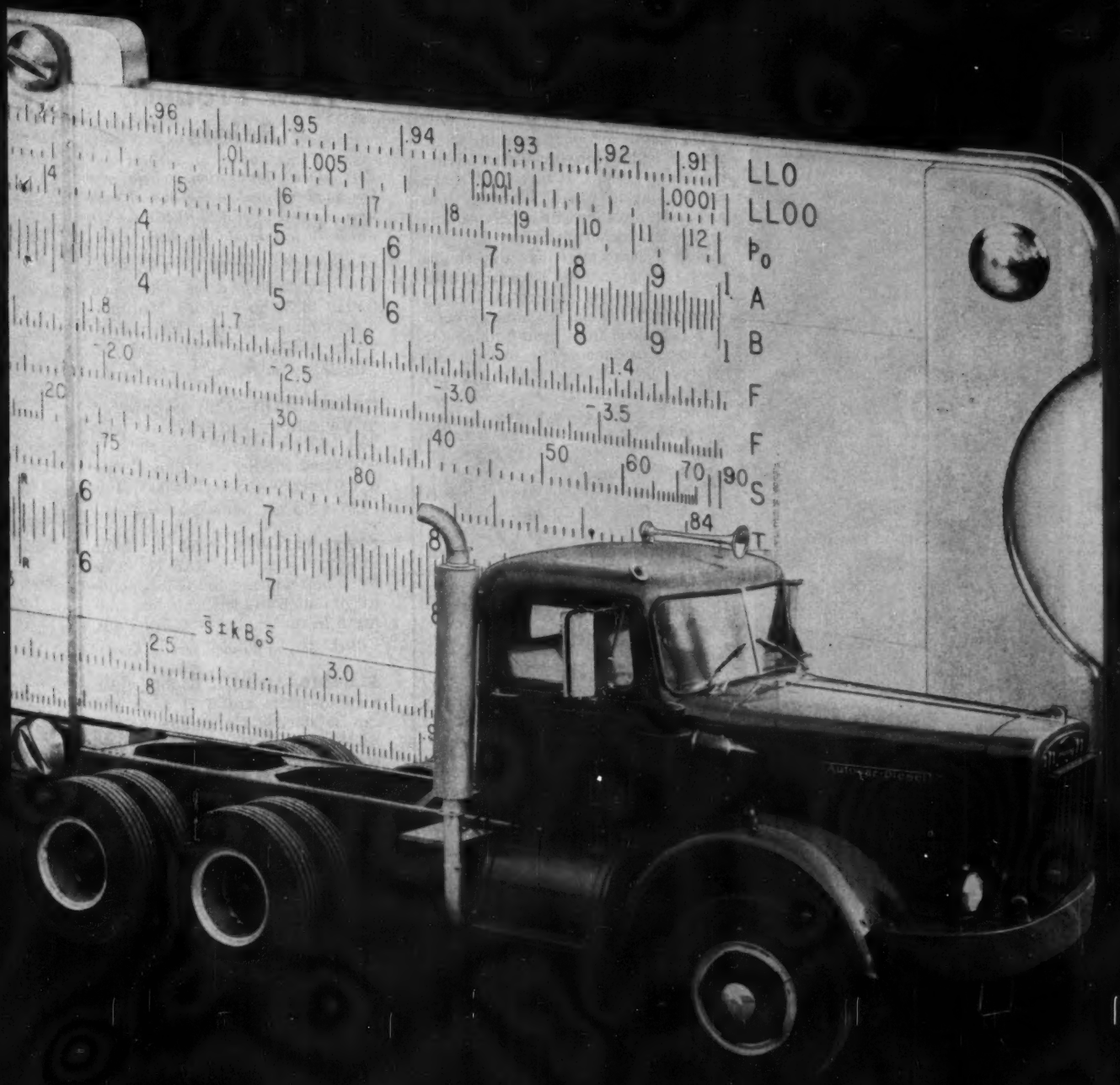


### Two Asphalt Plants

The smaller of two new White asphalt plants, the Model L-301B, is rated at 1,500 lb per batch; the larger L-501 is rated at 2,000 lb. Hot mix can be produced at the rate of 30 to 50 tph. Both plants are equipped with air-operated controls with air supplied by a built-in compressor. Available accessories include aggregate and asphalt scales, a dust collector and exhaustor, and an asphalt pump and meter.—White Mfg. Co., Elkhart, Ind.

Circle 328 on Reader Service Card





## Only the "World's Finest" is fully custom-engineered to your order

Nothing less than an Autocar can ever give the same owner-satisfaction as an Autocar itself. One reason is that every Autocar is fully custom-engineered and precision-built to do its assigned job with utmost efficiency. Long experience, advanced engineering and flexible manufacture produce just the truck, at a reasonable cost, that will earn the most for you.

The true value of an Autocar lies in the work it will do. In today's truck economics, you can't afford to take less.



DIVISION OF  
THE WHITE MOTOR COMPANY  
EXTON, PA.

Circle 161 on Reader Service Card

# ALL-NEW HEAVY-DUTY BREAKER



From throttle to tool retainer, this 80 lb. class Worthington Blu-Brute paving breaker is all-new. It takes both spike and sheeting driver. And it's designed to give faster breaking with better operator control and less maintenance.

How? There's more than a dozen improved design features. They range from an easy operating progressive throttle valve to simplify starting moils through to a renewable front head bushing for low cost replacement of the wearing part of the chuck housing. Other features mean less operator fatigue . . . for example, the extended "steel run."

In addition, the WB-82 wears better because of the exclusive Worthington process: Blu-Coated parts.

The Blu-Brute paving breaker line is complete from the 20 through 80 lb. classes. See your nearest Worthington distributor for more information about the new WB-82. Or request bulletin from Worthington Corporation, Dept. 60-28, Holyoke, Massachusetts.



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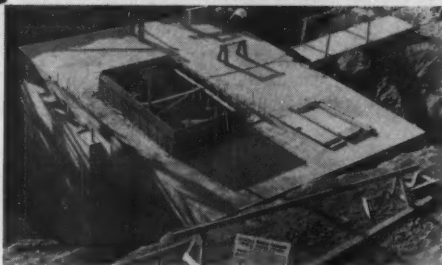
## How to square a circle with Gates

### Project:

\$60 million Los Angeles International Airport expansion program.

Both the underground Central Utilities Vault and the circular foundation of the new Terminal Building were formed with Gates Vertical Rod System using the same form panels! (Without additional modifications, backing or templates.)

1. Vault roof and 16-foot walls poured monolithically.
2. Forms stripped and panels moved to Terminal Building site.
3. Circular foundation, 16 feet high, diameter of approximately 130 feet, formed to precise curvature using the same 3/4" Gates thinpanels.
4. Outside forms "floated" with inside bracing only. Gates PlastiCone® breakback form ties provided 1-inch breakback specified.



Gates built-in versatility is designed to square circles...cut costs...help you bid a job closer without risking pocketbook or reputation! Get the whole story on Gates Concrete Forming Systems and techniques.

\*TRADEMARK

There's a Gates System for Every Forming Need

## Gates & Sons, Inc.

80 South Galapago Street—Denver 23, Colorado

Branches in Spokane, Rochester, Calgary  
Representatives in principal North American cities

Consult our catalog in Sweet's 1960  
Architectural & Light Construction Files  
...or write for complete information.

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## New Product Briefs

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

**TORQUE CONVERTER** — Three-element, single-stage drive is designed for 18 to 35-hp engines. Multiple-disk clutches permit forward-reverse shifts. — Prime Mover.

Circle 329 on Reader Service Card

**FLASHER LIGHT**—Unit is powered by 6-v battery and equipped with 7-in. red or amber lens able to withstand the heaviest blows from a hammer. — Selecto-Flash, Inc.

Circle 330 on Reader Service Card

**POWER TAKE-OFF**—P-200 pto bolts to any engine with SAE No. 2 or No. 3 bell housing and is independent of clutch and transmission, adding 8 in. to length. — Clark Eqpt.

Circle 331 on Reader Service Card

**SCAFFOLD**—Model K double-width scaffold units are 6 ft high and can be stacked for greater height. Built-in ladder is standard, stairway is optional. — Baker-Roos.

Circle 332 on Reader Service Card

**PUSH PLATE**—Four areas of tractor main frame resist load applied by 25-PF push plate available for TD-25. Plate measures 48x42x2 in. — International Harvester.

Circle 333 on Reader Service Card

**OIL FILTER** — Single-element, full-flow, controlled-pressure filter permits two flow rates in one element, requires only one inlet and one outlet.—Winslow Eng. & Mfg.

Circle 334 on Reader Service Card

**DUMP BODIES** — Welded bodies for all types of trucks are 8 to 30 ft long, 85½ and 78 in. wide, and have a height of 20 in. or more. — Productive Acres Mfg. Co.

Circle 335 on Reader Service Card

**TURBOCHARGER** — Designed for large vehicles with diesel engines of 500 hp or more, the T-24 operates efficiently over a broad range of flows and pressures.—AiResearch.

Circle 336 on Reader Service Card

**RADIO**—Pocket Talkie is a transistorized, pocket-size, two-way radio that operates on citizens' band over a range of up to 3 mi. Price: \$70. — Ross Laboratories.

Circle 337 on Reader Service Card

CONSTRUCTION METHODS

**GENERATOR**—Electric plants 25kw and larger incorporate Magneciter generators that contain a static exciter and voltage regulator with no moving parts. — Onan.

Circle 338 on Reader Service Card

**TRANSMISSION**—Nine-speed R-1750 RoadRanger transmission has gear ratios of 9.24 in first to 0.69 in ninth gear; reverse ratios of 9.56 and 2.71. — Fuller Mfg.

Circle 339 on Reader Service Card

**DRUM CART**—Four-wheel-mounted dolly holds drums for moving, mixing, pouring, emptying. Handle locks drum in place for turning end over end. — Hodgson Equip.

Circle 340 on Reader Service Card

**GRINDING WHEELS**—Solid rubber Mermac wheels for use with coated abrasive belts are offered for 6-in. air grinders delivering either 4,500 or 6,000 rpm. — Thor.

Circle 341 on Reader Service Card

**AIR, ELECTRIC REELS** — Automatically retracting air hose and electric cable reels swivel 180 deg when wall mounted, 360 deg when on ceiling. — Cordomatic.

Circle 342 on Reader Service Card

**UTILITY TRAILER** — The T3D-9 is 16 ft long and 67 in. wide, rides on six wheels, has a rated capacity of 9 tons. Loaded deck height is 18 in. — Talbert Trailers.

Circle 343 on Reader Service Card

**WELDER**—Weighing 41 lb and operating on 115 volts, the Model #150 power supply when used with Model H Arc Spot gun welds 14-ga or lighter thicknesses.—Bren Weld.

Circle 344 on Reader Service Card

**RADIO** — Measuring 6x3x1½ in., the VP-100 is a 100-mw crystal set that operates on any of 22 citizens' band channels over range of ½ to 3 mi. — Morrow Radio.

Circle 345 on Reader Service Card

**POWER STEERING** — Specially designed power steering conversion kits are available as replacement items for Caterpillar No. 12 and 112 motor graders.—R. H. Sheppard.

Circle 346 on Reader Service Card

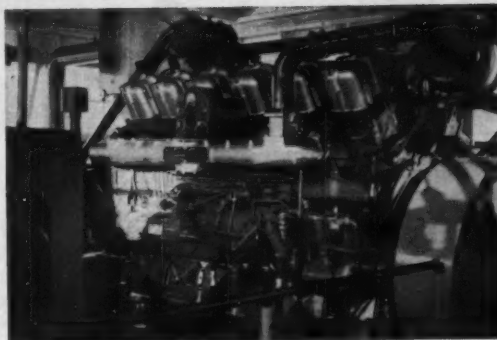
**LANDCLEARING RAKES**—Cable and hydraulically operated units for bulldozing or angledozing range in width from 95 in. for TD-9 to 151 in. for TD-25. — Drott.

Circle 347 on Reader Service Card



Marine Pipeliner No. 114 at work for contractor-owners Marine Pipeline & Dredging Co., Ltd., of Vancouver, B. C. This 16' suction dredge is 30' x 70' (without cutters and spuds), 5' deep, 2½' draft. Northern Engine & Eqpt. Co., Ltd., Vancouver, supplied its Waukesha Diesel.

## WAUKESHA *powered*



Power plant of dredge is a WAUKESHA Model VLRD85 Turbocharged DIESEL—12-cylinder, 60° vee, four cycle, 8½ x 8½-in. bore and stroke, 5788 cu. in. displacement. An independent cooling system replaces fan. About 1100 hp is applied on actual drive. Estimated capacity of V-belt driven pump is 456 cu. yds. per hour.

Working on a water-crossing of a gas pipe line in the Fraser River, British Columbia, as shown here... dredging on excavation for bridge piers... pipeline pumping of sand directly on road grade... or stock-piling river-sand—the Waukesha-Diesel-powered 16-inch suction dredge *Marine Pipeliner No. 114* has the capacity, speed and flexibility to handle the job. And it's portable, too—built on six pontoons, quickly disassembled for shipping on flat cars anywhere there's a job for the Marine Pipeline & Dredging Co., Ltd. They have three other portable dredges—all of them Waukesha-Engine-powered. Contractors appreciate the simplicity, dependability, and fuel and maintenance economy of the big, powerful Waukesha V-12 Turbocharged Diesel. *Send for Bulletin 1663.*

**WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN**

NEW YORK

TULSA

LOS ANGELES

Factories — Waukesha, Wisconsin, and Clinton, Iowa

Circle 163 on Reader Service Card

481



# Speed your shoring with **ACROW** ADJUSTABLE STEEL SHORES

ACROW adjustable steel shores...set in less than one minute by one man...removed in seconds. Hair-line adjustment...allows corrections even after pouring. Patented stud collar automatically cleans threads during stripping...your ACROW SHORES are ready immediately for next use.

All steel construction gives safer shoring...Highest load-carrying capacity. Each is a self-contained unit...no loose parts can be misplaced.

Made with standard head 6"x6" or beam type head 14"x4". Flat type head fits any size stringer. Working ranges 3'4" to 16'.

And for quickest, strongest, safest slab-decking supports at lower cost...use ACROWSPAN horizontal shoring, only two basic components. Makes ideal companion for the ACROW SHORE—the world's fastest selling shore, OVER 4,000,000 IN USE.



ACROW Denver, Inc., 1035 So. Huron St.  
Denver, Colorado • Phone SP 7-5486

NEW YORK • CHICAGO • DENVER  
TORONTO • MONTREAL

Circle 164 on Reader Service Card

## NEW Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy of the items you want, circle the appropriate numbers on the READER SERVICE CARD just inside the back cover.

**TRACTOR-LOADER** — Features of the Case Model W-5 four-wheeled front-end loader are covered in a 16-p booklet (CTS-164). The machine is equipped with a 1-cu-yd bucket that can be interchanged with an optional 1½ yd bucket. It has a carrying capacity of 3,000 lb at 4 mph and lift capacity standing still of 4,500 lb. The booklet contains complete specifications, details on both the 57 hp gasoline and diesel engines, and information on optional equipment.—J. I. Case Co., Racine, Wis.

Circle 348 on Reader Service Card

**TANDEM TRUCK**—White gives complete details of its new Model 4264S tandem truck in a 4-p folder. Designed for weight saving, the truck's standard chassis weighs 10,850 lb with fuel and features five-speed main and four-speed auxiliary transmissions. It has a high-strength frame and a Super Mustang gasoline engine that develops 170 hp.—The White Motor Co., 842 E. 79th St., Cleveland 1, Ohio.

Circle 349 on Reader Service Card

**MASONRY ANCHORING** — A revised and enlarged edition of its Masonry Anchoring Handbook has been issued by the Rawlplug Co. The 48-p handbook includes tables that show the proper anchor for each type of material or fixture. Dimensions and specifications are given for each type of anchor and drill. A section has been added on the Saber-Tooth anchor and other new products. — The Rawlplug Co., Inc., New Rochelle, N.Y.

Circle 350 on Reader Service Card

**CONCRETE FORMS** — An 8-p bulletin (E-263) discusses interior and exterior applications of Masonite Presdwood as a concrete form in the construction of beams, girders, slabs, walls, columns, foundations, and arches. It describes the special hardboard used in forming flat or curved



## 8 CONTRACTORS PRE-DEWATER WITH FLYGT on BIG SEWER JOB

On a \$23,100,000 sewer bond issue in Orange County, California, 8 separate contractors won their race against time and severe ground water intrusion with Flygt Electric, Submersible Pumps. The 19-mile Miller-Holder Trunk Sewer job experienced water intrusion from the first excavation, and it threatened to slow work to a crawl and run costs to astronomical highs. Key to the final success of the eight separate but simultaneous contracts was efficient, economical pre-dewatering developed jointly by Grindley Equipment Co. and Stanco engineers. Featuring more than 40 Flygt Electric, Submersible Pumps, the pre-dewatering systems drained and kept dry ditches along the right-of-way at substantial savings over other dewatering methods. Typical of contractor comments on the system:



"This system really does the job," declares Pete Barrett on the J. S. Barrett Co. \$2,667,727 contract for installation of 5½ miles of 78-inch line. "You just drop Flygt Pumps in the hole, turn them on and make only periodical inspections. They keep the ditch dry at realistic cost with none of the trouble normally experienced with suction-type pumps."



"These Flygt Pumps give you a chance to go home and sleep at night," says N. A. Artukovich on his company's \$1,846,870 contract for placement of more than 5 miles of 51- to 63-inch pipe. "The Flygts require little attention and keep the pipe and ditch dry despite continuous intrusion conditions. The pumps handle a lot of solids."

Flygt Electric, Submersible Pumps range from 1½" 85 gpm to 8" 3100 gpm capacity. Heads to 220' — higher in tandem. Designed and built for tough applications, they are adaptable to any dewatering job. Flygts run continuously with little attention, handle a high degree of solids, need no priming, are easy to handle and service. Ask today for literature and an on-the-job demonstration.

**FLYGT**  
PUMP BETTER ELECTRICALLY  
— USE FLYGTI

WESTERN SALES & SERVICE

**Stanco**  
MFGS. & SALES INC.

1666 Ninth St. (Corner of Olympic & Ninth)  
San Francisco, California

Circle 206 on Reader Service Card  
CONSTRUCTION METHODS

# FRUEHAUF DUMP TRAILERS

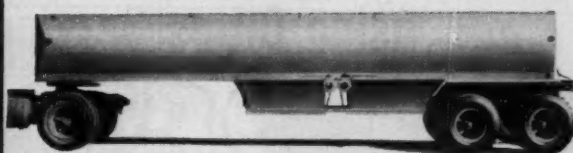
For More Profit  
On Any Job!



**THE FRUEHAUF-SCHONROCK** cable dump is still the most economical Dump Trailer to purchase or maintain. The simply-designed, frameless unit now has more cost-cutting, time-saving features than ever! Longer booster arms and larger rollers provide faster dumping with less strain on truck and cable. Payloads are still up to 4,000 pounds greater than those of most competitive hoist units with or without full chassis frames.



**THE NEW FRUEHAUF "TOUGHY"** I-Beam telescopic hydraulic hoist dump is available in both tandem and single axle units in a wide range of body and chassis lengths to fit your weight distribution needs. Capacities range from 8 to 26 cubic yards. 88" of inside width, with low or high sides.



**FRUEHAUF HOPPER-TYPE** Dump Trailers are available in many styles, with capacities up to 14 cubic yards. They are used by professional haulers for a variety of specialized uses, including the hauling of sand, gravel, crushed rock, cinders, slag, bulk cement, lime and many other aggregates and dry powdered materials. Specially suited to rough terrain.

For Forty-Six Years—World's Largest Builder of Truck-Trailers!



## FRUEHAUF TRAILER COMPANY

10949 Harper Avenue • Detroit 32, Michigan

PLEASE SEND ME FULL INFORMATION WITHOUT OBLIGATION ON THE NEW

☐ Cable Dumps    ☐ Hoist Dumps    ☐ Hopper-Type Dumps

NAME \_\_\_\_\_ (Please Print)

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

J. E. FARMER, GENERAL CONTRACTOR  
BILLERICA, MASS.



## Dozer bulls through 9000 hours without overhaul using Cities Service C-Series Motor Oil



**Right down the line.** Mr. Farmer and his four sons help in the operation of this growing construction firm. The four boys were taught the importance of efficiently run equipment.



**The Farmer sons** learned early the value of Cities Service lubricants in the economic operation of machinery. Seventeen-year-old David is shown here running a dozer.

"A man in business for himself has to run his equipment efficiently and economically in order to turn a profit. For the last 12 years Cities Service products have kept my equipment running trouble-free, with a minimum of maintenance costs," says James Farmer.

A prime example is the bulldozer shown above. Using Cities Service C-Series Motor Oil, it has logged 9000 grueling, work-filled hours, without overhaul, and is still going strong. With Cities Service lubricants, another dozer owned by Mr. Farmer ran up 11,000 hours without having the head removed.

In his excavation, quarrying and real estate development work, Mr. Farmer uses four bulldozers, four 10-wheel dump trucks, a trailer truck and other assorted pieces of equipment. All are kept running smoothly and economically with Cities Service Trojan MP gear oil, North Star Oil and C-Series Motor Oil. With high detergency, exceptional heat resistance, and ability to minimize sludge, carbon, varnish and lacquer, C-Series oil is a big contributor to Mr. Farmer's low maintenance costs.

To learn how Cities Service lubricants can help you, talk with your local Cities Service Lubrication Engineer, or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

**CITIES  SERVICE**  
QUALITY PETROLEUM PRODUCTS



## NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

surfaces of reinforced or massed concrete. A table of properties and instructions for working with Presdwood forms are included.—Masonite Corp., 111 W. Washington St., Chicago 2, Ill.

Circle 351 on Reader Service Card

**GRINDING CONCRETE**—A 4-p bulletin (No. 5922) gives information on grinding concrete for fine finishes. It covers the proper accessories and speeds for wet rubbing and dry grinding. There is also a section on grinding prestressed concrete beams.—Stow Mfg. Co., 31 Shear St., Binghamton, N.Y.

Circle 352 on Reader Service Card

**CRUSHING PLANT**—Cedarapids describes its Super Commander, a portable tandem-crusher aggregate plant, in an 18-p booklet (SC-1). It includes details of a newly-designed twin-jaw primary crusher. Also illustrated are the screen, conveyors, feeder, and elevating wheel.—Iowa Mfg. Co., Cedar Rapids, Iowa.

Circle 353 on Reader Service Card

**CRAWLER TRACTOR**—A 24-p booklet covers the operations of Euclid C-6 tractors in the Pacific Northwest. The booklet (Form 608) presents case-history reports gathered from a number of contractors who used the 211-net-hp tractor in a variety of tasks.—Euclid Div., General Motors Corp., Cleveland 17, Ohio.

Circle 354 on Reader Service Card

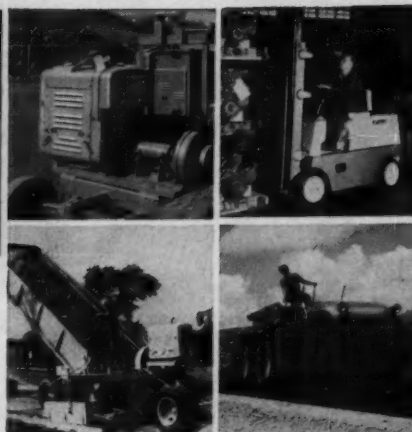
**CRAWLER TRACTOR**—International's TD-25 diesel crawler tractor is the subject of a 24-p catalog. The catalog, CR-791-I, covers details of the 230-hp engine and power steering, and includes specifications.—International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Circle 355 on Reader Service Card

**HOISTING CONCRETE**—Crete-Quip, a concrete hopper and bucket assembly for raising concrete in a conventional material hoisting tower, is described in a bulletin issued by Beaver-Advance. Bulletin 72 includes a large diagram that identifies the

## CONTINENTAL RED SEALS ARE ENGINEERED TO FIT THE JOB

Rarely will you find an item of industrial, construction or road building equipment that won't run best and cheapest on Continental Red Seal power. The reason lies in specialization—in Continental's long-standing policy of engineering each model precisely to the work to be done. Whatever the machine . . . whatever its job . . . you can bank on it for abundant power at the speeds consistent with low fuel and upkeep cost.



Continental's ruggedness and rightness of design are helping to build prestige for more and more of the leading builders of specialized power equipment. It's wise when buying equipment of this type, to choose a make with dependable Red Seal power—power backed by specialized experience dating from 1902.

**SERVICE AND PARTS  
AVAILABLE EVERYWHERE**



**Continental Motors Corporation**

MUSKEGON • MICHIGAN

Circle 164 on Reader Service Card

## Delivers Any Output up to 400,000 BTU's ELECTRO-JET

SELLS FOR ONLY  
**\$298**  
F.O.B. FACTORY

### CONTRACTORS PORTABLE HEATER

Contractors tell us it's sensational! It really proved itself in the field—over 5,000 sold last year. Priced so low you can buy several!



Model  
710

- One simple oil burner pressure adjustment nearly doubles regular output 200,000 BTU's.
- Push button control. Lights instantly—up to 500 degrees in 70 seconds. Thermostat maintains constant temperature ranging from 20 to 90 degrees.
- Fully automatic oil burner burns kerosene or No. 1 fuel oil. Runs 12 hours on one filling. Gas engine driven model priced slightly higher.
- 110 volt blower delivers 2,500 cu. ft. of air per minute.
- Lifetime guarantee.

### DEALERS WANTED!

Make \$500 a week. Complete line. Exclusive territory.

## WRITE FOR DETAILS TODAY

### ELECTRONICS, INC.

3011 East Cherry, Vermillion, S. Dak.

I am interested. Please send more information on—

☐ Electro-Jet Model 710 Portable Heater

☐ Model 800 Heating Plant

☐ I am interested in dealership. Send more information.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Model  
800

**200,000  
BTU Oil or Gas Fired  
Heating Plant**

Portable unit burning any grade home fuel oil can be installed for permanent or temporary heat.

**\$329** F.O.B. Factory

Circle 207 on Reader Service Card



*Just 1 1/2 oz. of oil*  
**...LASTS A MONTH!**



viber internal and external vibrators in use in prestress yard. Photo shows Model TV5 external vibrator on form.

## **NEW TURBOVIBER®**

**...fast, powerful vibration for**

- concrete pipe • prestress • precast
- tunnel lining and related applications

One simple turbine rotor—no vanes or cylinders, no sliding friction—supplies the power for the new Viber TurboViber. Exceptionally high frequency of 10,000 rpm or more exerts impact action of well over a ton.

No motor lubrication ever! No line oilers required! Only a few cents worth of oil lubricates sealed eccentric for a month or more under normal operating conditions. Fewer parts mean simplified servicing and longer life with drastically reduced operating costs. Five different mountings make attachment easy for any job application.

See your Viber dealer now! Or write for details on how new TurboViber can do a better external vibrating job at lower costs to you in maintenance savings alone! Viber Company, 726 South Flower Street, Burbank 12, California.



**PIONEERS AND LEADERS IN THE MANUFACTURE OF VIBRATORS**



# **Viber Vibrators**

Circle 168 on Reader Service Card

### **NEW PUBLICATIONS . . .**

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

component parts of Crete-Quip. A photo sequence explains how two men can operate the hopper assembly. — **Beaver - Advance Corp., Box 792, Ellwood City, Pa.**

Circle 356 on Reader Service Card

**TAMPER** — Stow describes its Model T-18 Synchro-Tamper in a bulletin that includes specifications and design features. The bulletin describes how engine and vibrator stroke are synchronized to deliver maximum impact without dampening effect. — **Stow Mfg. Co., 31 Shear St., Binghamton, N.Y.**

Circle 357 on Reader Service Card

**TRACTOR SHOVELS**—Handling characteristics of six Michigan tractor shovels are featured in Bulletin 3000 covering Models 55A, 55B, 75A, 85A, 125A, and 175A. These models are equipped with buckets ranging in size from 1 to 2 3/4 yd. Sections are devoted to specifications for each tractor shovel model, plus the power train, hydraulic system, bucket, and engineering features. — **Construction Machinery Div., Clark Equipment Co., Benton Harbor, Mich.**

Circle 358 on Reader Service Card

**JAW CRUSHER**—Bulletin 133-601 describes Universal's new matched jaw crushers in the 13x36-in. and 18x36-in. sizes. It explains the advantages of two moving jaws in a single crusher, and gives details of the longer jaws, gear type drives, and jaw adjustment mechanism. — **Universal Engineering Corp., Cedar Rapids, Iowa.**

Circle 359 on Reader Service Card

**MOBILE WELDING UNIT** — A 4-p folder presents the TD-15-500-1 Paywelder, a mobile welding unit built around a 120-hp TD-15 diesel tractor. The rig, useful for pipeline construction, carries two 325-amp dual welders with four leads, driven by power take-off from the tractor engine. The folder includes operating details and specifications. — **International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

Circle 360 on Reader Service Card

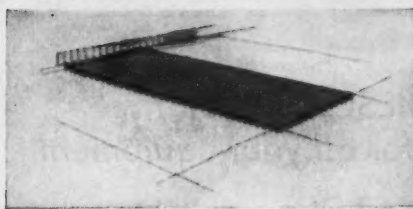
**CONSTRUCTION METHODS**



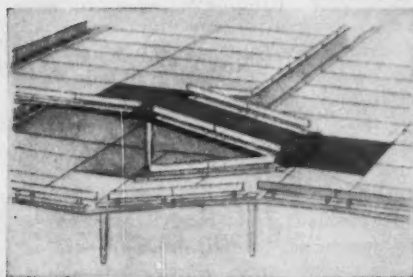
\*TIERPARK, a development and product of the Tishman Research Corporation, was designed by Edgardo Contini, Engineer.

## Multi-Story Prestressed Concrete Parking Structure

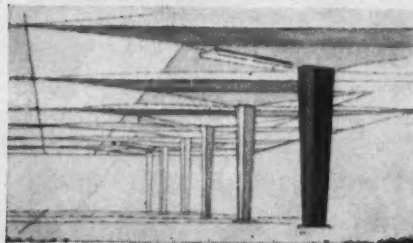
### *Designed for fast erection*



**SLAB**



**RAMP SLAB**



**COLUMN**

**Self-parking structure requires only three standardized components, mass-produced by concrete fabricators**

TIERPARK is a self-parking type of garage that can be erected quickly because it is made up of standardized prestressed concrete components which are mass-produced and stockpiled at a casting plant. The components are assembled on-site in single or multi-tier combinations by a simple sequence of bolting and grouting.

**Components are cast by leading concrete fabricators**

There are only three primary components of TIERPARK. The typical slab, ramp slabs and typical columns form the entire structural system. No beams or girders are required. And a specially designed rigid connection between columns and slabs does away with the necessity of bracing or shear walls to resist wind or seismic forces. Tishman has licensed over 80 of the country's leading prestressed concrete fabricators to manufacture TIERPARK components.

**1200-car TIERPARK uses 120 miles of Bethlehem Strand**

Now underway for the Hempstead, Long Island store of Abraham & Straus, a division of Federated Department Stores, Inc., is a TIERPARK with a capacity of 1200 cars. All prestressed concrete members were made by Prefabricated Concrete, Inc., Cedarhurst, Long Island. Tensioning elements consisted of over 120 miles of 7/16-in. stress-relieved strand, manufactured by Bethlehem. Fabricators like Bethlehem strand's easy-to-handle flexibility in the casting bed. And they know they can rely on its consistent, dependable quality from reel to reel.

For further details on this new project or information on induction heated stress-relieved strand, write to our Wire Rope Sales Department.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.

Export Sales: Bethlehem Steel Export Corporation

# BETHLEHEM STEEL



\*Trademark of the Tishman Research Corporation—Patent Pending



## Advertisers' Literature

Listed below is free material offered in this issue's advertisements received up to Oct. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

**FASTENING SYSTEM**—Booklet explains Ramset's powder-actuated system for driving studs in concrete or steel.—Olin Mathieson.

Circle 361 on Reader Service Card

**HEATERS**—Portable space heaters available in models from 100,000 to 1,000,000 Btu are covered in catalog 5815.—Stow Mfg. Co.

Circle 362 on Reader Service Card

**MOBILE DRILL**—A 4-p brochure gives specs, tool options, and features of Minuteman portable rotary drill.—Mobile Drilling.

Circle 363 on Reader Service Card

**SEALANT**—Here's data on liquid sealant that bonds nut and bolt threads—yet treated parts can be removed.—American Sealants.

Circle 364 on Reader Service Card

**FORK LIFT TRUCKS**—Specifications for five models of heavy-duty fork lift trucks with 10 to 21-ft lift heights are available.—Ford.

Circle 365 on Reader Service Card

**FUEL INJECTION SYSTEM**—Two guides to diesel fuel injection systems feature pump and filter operations.—Hartford Machine.

Circle 366 on Reader Service Card

**TILT-UP DEVICE**—Bulletin TU-4 describes a special equalizer for reducing stresses when lifting tilt-up panels.—Superior.

Circle 367 on Reader Service Card

**BLASTING**—Brochure presents information on use of N-IV ammonium nitrate and fuel oil mixture for blasting.—Spencer Chemical.

Circle 368 on Reader Service Card

**DUMP TRAILERS**—Booklet details cable dump, telescopic hydraulic hoist dump, and hopper-type dump trailers.—Fruehauf Trailer.

Circle 369 on Reader Service Card

**COMPACTOR**—Booklet gives data on the self-propelled Kompactor that, manufacturer says, costs 2¢ a yd to run.—Buffalo-Springfield.

Circle 370 on Reader Service Card

**STEEL BUILDINGS**—A 36-p booklet describes temporary and permanent shops and warehouses from 12x16 ft to 100x300 ft.—Armco.

Circle 371 on Reader Service Card

**TRUCK CRANES**—Catalogs present operating details of heavy-duty cranes mounted on rugged four-axle trucks.—Koehring.

Circle 372 on Reader Service Card

**BLASTING**—Cost chart, slide rules, and technical data are designed to help pick the right combination of explosives.—Atlas.

Circle 373 on Reader Service Card

**PILING**—New Catalog CM-10 gives details of a full line of piling—sheet, pipe, and H-beam—as well as driving accessories.—L. B. Foster Co.

Circle 374 on Reader Service Card

**DRILL**—Booklet gives data on the self-powered Model C-42 crawler Rotadrill with an air compressor built in.—Schramm.

Circle 375 on Reader Service Card

**FORMS**—Complete details of Simplex-Waco self-aligning heavy-duty concrete forms are now available.—Simplex Industrial Forms.

Circle 376 on Reader Service Card

## Plan Your Future NOW!

Insist on

**Lister**

**DIESEL POWER**  
for all your equipment



Model SL3,  
12½ BHP  
@ 1800 RPM

**AIR-COOLED DIESEL POWER**  
AVAILABLE FROM 3½ BHP TO 72 BHP  
WRITE FOR COMPLETE DETAILS

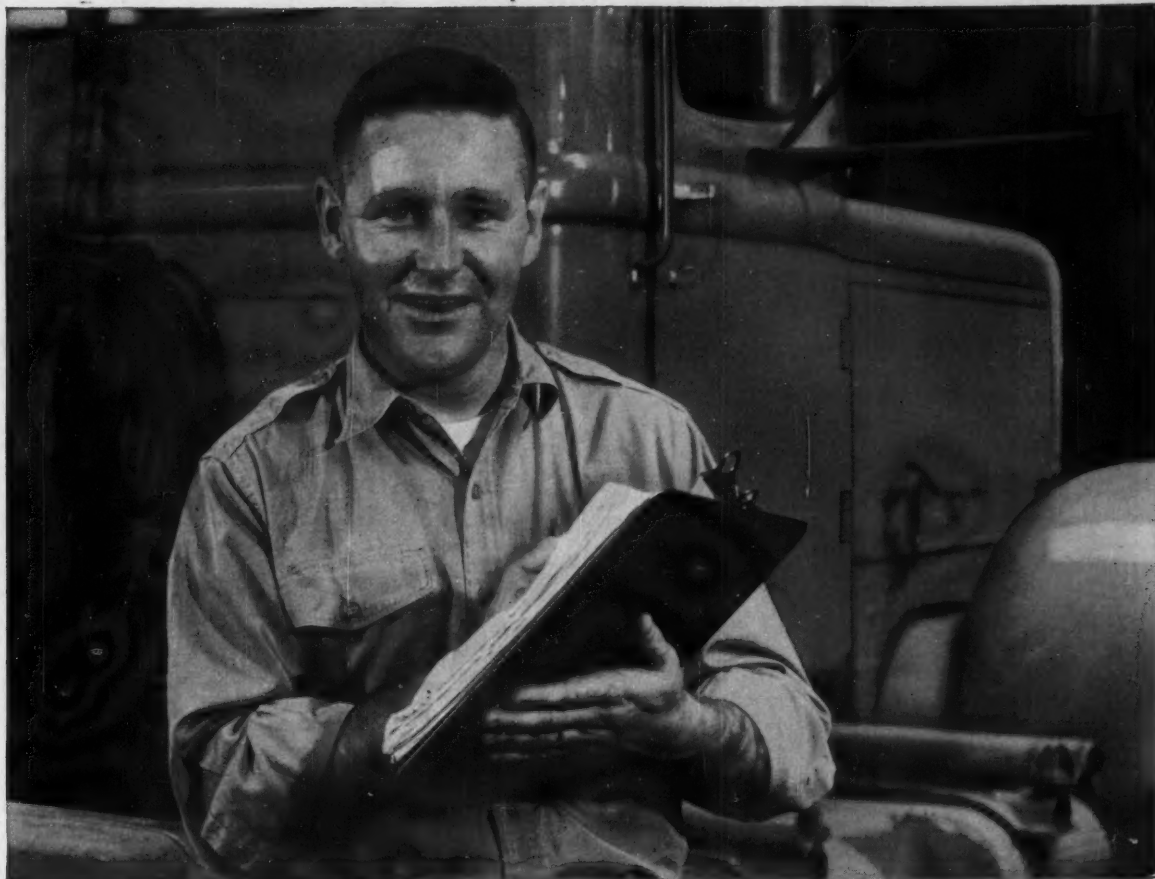
Distributorships available in some areas

**LISTER-BLACKSTONE, INC.**

42-32 21st Street, Long Island City 1, New York, Tel.: Stillwell 6-8202

In Canada: Canadian Lister-Blackstone, Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.

Circle 170 on Reader Service Card



## Ask Any Truck Serviceman about Eaton 2-Speed Axles

**A**sk the man who has to keep trucks rolling. He'll tell you that Eaton 2-Speeds not only operate for long periods without attention, but that they also cut deep into over-all maintenance costs.

No one knows like a truck serviceman that matching axle gear ratios to the hauling job means easier going for all power units from engine to axle shafts. Eaton 2-Speeds let drivers select from twice the conventional number of gear ratios—the right ratio for the immediate road and load condition. Trucks stay on the job, out of the shop—last thousands of miles longer. And Eaton's many exclusive design features hold down maintenance on the axle itself. When repair is necessary, Eaton's simplified construction speeds the work and slices off costly hours of labor.

Before you specify driving axle equipment, let a truck serviceman give you the low-down on Eaton 2-Speed Axles.



More than  
Two Million Eaton Axles  
in Trucks Today

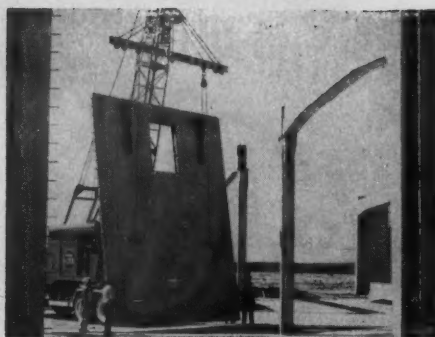
# EATON

AXLE DIVISION  
MANUFACTURING COMPANY  
CLEVELAND 10, OHIO

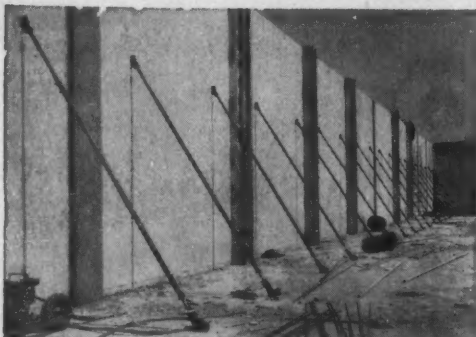


**WAREHOUSE**

DANIEL CONSTRUCTION CO. PHOTO



**SUPERIOR Stress Equalizers, Pick-Up Inserts, and Lifting Angles were used on this panel.**



**ADJUSTABLE BRACES** used for quick and easy alignment of panels

DANIEL CONSTRUCTION CO. PHOTO

# **SUPERIOR**

## **Has the Accessories AND the System for TILT-UPS...**

### **FROM ORIGINAL LAYOUTS TO FINAL POSITIONING**

In addition to tilt-up accessories which have been used and proven on thousands of conventional as well as unusual projects in this field, SUPERIOR also provides the *system* for the entire job, from original planning and layouts, to the final positioning of the precast panels.

As the pioneer in this field, SUPERIOR has recently developed a special Stress Equalizer for reducing lifting stress in tilt-up panels of over 20 ft. high. It offers two advantages: (1) Less concrete reinforcing steel is required for stresses which occur at time of lift; (2) Permits use of simplified crane rigging.

On your next tilt-up job, avoid expensive crane delays, be assured of safety, and reduce overall costs! Specify the SUPERIOR System.

For details request a copy of *Bulletin TU-4*.

# **SUPERIOR**

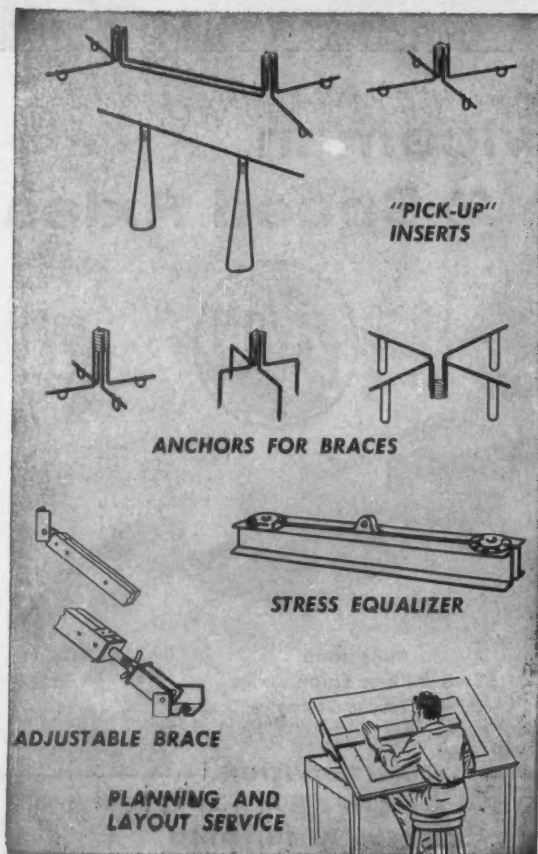
**CONCRETE ACCESSORIES, INC.**

9301 King St., Franklin Park, Ill. (Suburb of Chicago)

*Pacific Coast Division Office and Factory:*  
2100 Williams Street, San Leandro, Calif.

*New York Office:*  
39-01 Main St., Flushing 54, New York

*Houston Office:*  
4101 San Jacinto, Houston 4, Texas





## AD LITERATURE

Listed below is free material offered in this issue's advertisements received up to Oct. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

**ASPHALT PLANTS** — Catalogs describe low-cost asphalt plants that are now available in models ranging from 6 to 60 tons.—White.

Circle 377 on Reader Service Card

**FLASH SIGNALS**—Catalog 55 shows the complete Dietz Visi-flash line, which includes the new No. 695 with 5-in.-dia lens.—R. E. Dietz.

Circle 378 on Reader Service Card

**PORTABLE HEATER** — Details are available on Electro-Jet portable oil heater capable of delivering up to 400,000 Btu.—Electronics, Inc.

Circle 379 on Reader Service Card

**CRANES**—Booklet details the Lorain Moto-Crane equipped with Power-Set outriggers that can be set in less than 1 min.—Thew Shovel.

Circle 380 on Reader Service Card

**WIRE ROPE**—Bulletin 5702 is a reliable guide to "Contractor's Choice" wire rope for a variety of heavy-duty purposes.—MacWhyte.

Circle 381 on Reader Service Card

**SNOW PLOW CONTROLS**—A folder describes hydraulic controls that lift and lower snow plows automatically.—Monarch Road Machinery.

Circle 382 on Reader Service Card

**TRACTOR SHOVEL**—Data is available on Payloader models up to 12,000-lb capacity and many attachments.—Frank G. Hough.

Circle 383 on Reader Service Card

**SCRAPER**—Catalog 555 presents information on the twin-engine 296-hp TS-14 with 14-yd struck and 20-yd heaped capacity.—Euclid Div.

Circle 384 on Reader Service Card

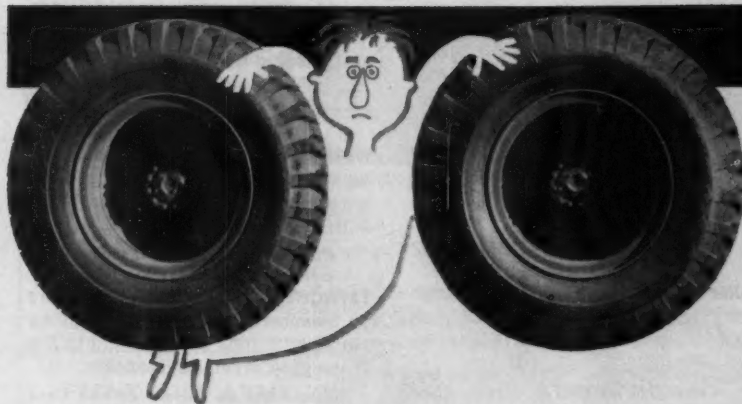
**COMPRESSOR**—A catalog describes the Jaeger 900-cfm rotary compressor that operates at 1,700 rpm instead of usual 1,800 rpm.—Jaeger.

Circle 385 on Reader Service Card

**AIR-COOLED ENGINES** — Bulletin S-251 gives details of heavy-duty air-cooled engines ranging from 3 to 56 hp.—Wisconsin Motor.

Circle 386 on Reader Service Card

**SHORING** — Bulletin 110A describes heavy-duty frame shoring that car-



## NEED A BACK-UP ALARM?



**E. D. BULLARD COMPANY  
SAUSALITO, CALIFORNIA**

Circle 173 on Reader Service Card

Call your Bullard distributor  
he has a mechanical one —  
that works better, is less  
costly, easier to install, and  
takes no maintenance.  
Pick up your phone right now,  
or write for literature.

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on the products described  
and advertised in  
**CONSTRUCTION METHODS  
and Equipment . . . . .**

plus articles and other editorial reprints on subjects of interest and value to you.

### TURN TO THE NEW READER SERVICE CARD

on the last page  
in this and all subsequent  
issues of **CONSTRUCTION  
METHODS AND EQUIPMENT.**

## Construction Methods AND EQUIPMENT

A MCGRAW HILL PUBLICATION

330 West 42nd Street, N.Y. 36

## HOW WE CUT PRODUCTION TIME IN HALF

By a Stow Vibrating Screed  
Owner

Our contract called for us to finish a number of bridge decks on the Massachusetts Turnpike. We needed to strike off our concrete decks fast and yet produce just the right crown.

After seeing the fine results obtained by another contractor, who was using Stow Vibrating Screeds for a similar job, we decided to buy Stow Screeds ourselves. Specifications of the crown we required were given to Stow; we received the screed beam with the crown built right in.

We were highly commended by the Turnpike Commission for the fine job the Stow Screeds did. We were able to cut production time on these decks almost in half, because we found that Stow Screeds strike off STIFF concrete smooth and true to grade.

This story is typical. Stow Screeds have been used all over the world for striking off concrete on bridge decks, short sections of highways, prestressed panels and floors. Stow Screeds are available complete with beam, or in the new Stow package assembly, containing everything but the beam. For complete information on Stow Vibrating Screeds, contact your nearest Stow distributor, listed in the yellow pages of your telephone book under "Concrete Vibrators", or write Stow Manufacturing Co., 31 Shear Street, Binghamton, N. Y.

Circle 208 on Reader Service Card

## AD LITERATURE

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ries up to 20,000 lb per frame.—Safeway Steel Products.

Circle 387 on Reader Service Card

**PUMPS**—Electric submersible pumps ranging in capacities from 85 gpm to 3,100 gpm are covered in a booklet.—Flygt.

Circle 388 on Reader Service Card

**BITS AND DRILLS**—A 6-p booklet provides information on a complete line of industrial drills and diamond bits.—E. J. Longyear Co.

Circle 389 on Reader Service Card

**CONCRETE BUGGY**—Detailed information on powered buggies includes job estimating data and performance reports.—Prime Mover.

Circle 390 on Reader Service Card

**SHORES**—New literature gives details of adjustable steel shores with stud collars that clean threads during stripping.—Acrow Corp.

Circle 391 on Reader Service Card

**PLACING CONCRETE**—More than 300 items for placing and handling concrete, including 1/3 to 8-yd buckets, are given in a catalog.—Gar-Bro.

Circle 392 on Reader Service Card

**WIRE ROPE**—Tuffy Tips, a handbook on the abuses and correct uses of wire rope and slings, is available.—Union Wire Rope.

Circle 393 on Reader Service Card

**TRENCHERS**—Bulletin L-109 covers 10 trencher models with a digging range of 8 to 52 in. wide and to 8½ ft deep.—Cleveland Trencher.

Circle 394 on Reader Service Card

**DREDGE POWER PLANTS**—Bulletin 1663 gives details of dredge power plants, including turbocharged diesel models.—Waukesha Motor.

Circle 395 on Reader Service Card

**PUMPS**—A complete line of AGC rated pumps and dependable Mud Hogs are fully described in Bulletin C-09.—Marolow Pumps.

Circle 396 on Reader Service Card

**CONCRETE**—Descriptive 1-p sheet gives simple step by step procedures for making concrete test cylinders correctly.—Alpha.

Circle 397 on Reader Service Card

**PAVING BREAKER**—Bulletin describes the new WB-82 paving breaker that takes both a spike and sheeting driver.—Worthington.

Circle 398 on Reader Service Card

**WELLPOINT SYSTEM**—Catalog 1,000 tells how tough dewatering problems were handled, describes basic wellpoint equipment.—Moretrench.

Circle 399 on Reader Service Card

**TUNNEL CARS**—Bulletin 18-b gives details of a 2½-yd side dump, 1-yd rocker dump, and ½ to 2-yd car with removable box body.—Mayo

Circle 400 on Reader Service Card

**DREDGES**—Bulletin 980 gives details of portable dredges that can be assembled on shore or in the water.—Ellicott Machine.

Circle 401 on Reader Service Card

**TRAILERS**—Information is available on 35-ton-capacity drop deck trailers made with high-strength steel.—Talbert

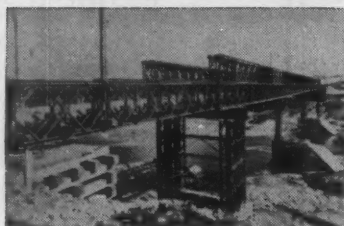
Circle 402 on Reader Service Card

**HOISTS**—Bulletin 34 provides specifications and full details on a complete line of hoists.—Clyde Iron Works

Circle 403 on Reader Service Card

# YOU CAN DO IT FASTER...

## with Bailey Bridging...



For emergency, access, permanent or suspension type bridging. These versatile units also used for buildings, forms, trestles, falsework. Bridge shown here is over Smooth Rock Falls, Ontario, Canada, one of five Baileys used by Ontario Department of Highways in this area.



## ... and Uniflote Ferries ...

Combined floating Uniflote sections provide transport across water for loads up to 100 tons! Other uses: floating platforms for derricks, cranes, piledrivers. Landing stages, wharves, piers, etc. Uniflote Ferry in photograph carried 30-ton equipment load across Harbour in Toronto, Canada.

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SOLE DISTRIBUTORS IN CANADA AND U.S.A.

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TELEPHONE HU. 5-4424

TORONTO 17, CANADA

38 COMMERCIAL ROAD

Timberland Machines Inc.  
25 Park Street,  
Lancaster, New Hampshire

REPRESENTATIVES

Mason and Bason Inc.  
McClure Building  
Frankfort, Kentucky

Circle 174 on Reader Service Card

CONSTRUCTION METHODS

# CONSTRUCTION CONTRACTING

By **RICHARD H. CLOUGH**,  
Chairman, Department of  
Civil Engineering,  
University of New Mexico

This is a study of the five basic management functions as they apply to the construction contracting industry. The following are set out in great detail:

- ORGANIZATION
- CONTROL
- STAFFING
- DIRECTION
- PLANNING

Each area is developed in a fundamental way to give a basic working knowledge, and to put it into the proper perspective. The book will also serve as a valuable reference on construction insurance, contract bonds, labor legislation, and other such specific matters.

1960 382 pages \$9.75

SEND NOW FOR  
YOUR ON-APPROVAL COPY

**JOHN WILEY & SONS, Inc.**  
440 PARK AVENUE SOUTH,  
NEW YORK 16, N. Y.

Circle 175 on Reader Service Card  
OCTOBER, 1960

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Employment Opportunities—\$30.33 per inch, subject to Agency commission.  
An advertising inch is measured 1/8" vertically on one column, 3 columns—36 inches—to a page.  
Send New Advertisements and Inquiries to Classified Adv. Div. CONSTRUCTION METHODS & EQUIPMENT, P. O. Box 12, N. Y. 6, N. Y.

\$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line. Discount of 10% if full payment is made in advance for 4 consecutive insertions.  
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Box Numbers—count as one line.

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PATENTED & PATENTS PENDING

Low plant costs. Lowest manufacturing and installed costs. A proven precast floor and roof system that exceeds all others on construction requirements.

Millions of square feet of this system have successfully been used.

For full details write

**CONRAD SEDERLUND**

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Circle 223 on Reader Service Card



U.S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. \$35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or \$25.00 per mile. Write for free list on telephones. All shipments F.O.B. Simpson, Pa.

**TELEPHONE ENGINEERING CO.**  
Dept. CM-100 Simpson, Pa.

Circle 224 on Reader Service Card



Circle 225 on Reader Service Card

**"SEARCHLIGHT"**  
IS  
Opportunity Advertising  
—to help you get what you want—to help you sell what you no longer need.  
**Take Advantage Of It**  
For Every Business Want  
"THINK SEARCHLIGHT FIRST"

### For Sale

#### CONCRETE PLANTS

■ Four Koshring 2 Cu. Yd. Tilting Mixers, Johnson 400 Cu. Yd. 6 Compartment Bin with Rescreening, Johnson Auto Weigh Batchers with Dials, Feeder Conveyor, 7315 Bbl. and 800 Bbl. Cement Silos with Bucket Elevator, Fuller Bulk Cement Unloading System (R.R. cars to silos), Aggregate Stacking and Reclaimer Conveyor System, Aggregate Chilling System, Water Heating System, Power Requirements 220/440V—3 Phase—60 Cycle. Plant in operation, available Oct. 31, 1960; located at Niagara Falls, N. Y.

■ Johnson Concrete Mixing Plant (less mixers) with 300 Cu. Yd. Bin, Weigh Batchers, Auto-Recording Dials, 12 x 44' Bulk Cement Storage Silo, 24" x 242' Barber-Greene Inclined Belt Charging Conveyor, Elevators, Screw Conveyors, etc. Plant dismantled, ready for shipment F.O.B. Arizona by Oct. 31, 1960.

■ Four Koshring 2 Cu. Yd. Tilting Mixers, Johnson 314 Cu. Yd. 6 Compartment Bin, Johnson Weigh-Batchers with Dials, 3000 Bbl. Cement Silo with Bucket Elevator, Belt & Screw Conveyors, Syntren Feeders, Water Heating System. Power requirements 220/440 V—3 Phase—60 Cycle. Plant in operation, available Dec. 31, 1960; located in State of Washington.

#### AGGREGATE PLANT

■ Six Telsmith & Syntren Feeders—Heavy Duty Vibratory, 5 Telsmith Screens, #138 Gyrotary Crushers 5' x 6" x 12' Rod Mill with Complete set of Rods, Classifiers, Washers, Sand Pumps, Radial Stacker, Conveyors, Sand Dryer, Rotary Grizzler, Electric Motors, etc. Power requirements 220/440 V—3 Phase—60 Cycle. Plant in operation, available Oct. 31, 1960; located in State of Washington.

#### AGGREGATE PLANT COMPONENTS

■ Barber-Greene 161 ft. Conveyor for 30" belt; two tensioners, 30 HP Motor—3 Phase—60 Cycle—220/440 V; Barber-Greene 83 ft. Conveyors for 30" belt; two tensioners, 15 HP Motor—3 Phase—60 Cycle—220/440 V; three Drive Heads with motors and tensioner pulleys. Plant available now; local.

**MERRITT-CHAPMAN & SCOTT CORP.**

260 MADISON AVENUE

New York 16, N. Y. — Oregon 9-3500

FOR INFORMATION AND INSPECTION

Call or Write P. F. Gaynor, Jr.

Circle 221 on Reader Service Card

#### ECONOMY FORMS

Miscellaneous sizes. Purchase Price \$30,000.00. Owned by Joint Venture. Used on one project. Stored in Bridgeport, Conn.

**CAMPANELLA & CARDI CONST. CO.**  
790 Jefferson Blvd., Warwick, R. I.  
Tel: Rogat 7-1800

Circle 222 on Reader Service Card



## Maintenance Shop...



**BENDING**—Breaks from bending-type loads start at the fillet and progress through web.



**TORSIONAL VIBRATION**—Such vibrations cause shafts to fracture at 45 deg.



**IMPROPER SHIMMING**—Thrust on crankshaft breaks off flange of rear main bearing.

## Why Crankshafts Fail

By W. E. IRWIN  
Manager, Service Department  
Caterpillar Tractor Co.

WHEN AN ENGINE crankshaft fails, it's an owner's natural reaction to blame the manufacturer. And company representatives investigating such failures often get all the blame. They are met with such remarks as: "Your engine broke a crankshaft and ruined our torque converter," or "Your engine failed, and we expect you to give us a new one, or at least a new crankshaft and cylinder block."

Engine builders often recompense owners for engine damage resulting from crankshafts and other engine components that failed because of defects in materials or workmanship. But records show that the odds seem to be heavily in favor of some external force or condition causing crankshaft failures.

Misaligned power take-offs are a case in point. No engine is designed to withstand the extreme stresses caused by improperly designed or positioned power take-offs that exert abnormal forces on the crankshaft and bearings.

Recently a relatively new engine on a drilling rig experienced a severe seizure of the rear main bearing. This ruined the crankshaft as well as the cylinder block and caused damage amounting to nearly \$10,000.

In this case the engine had been driving directly into an air clutch, and an on-the-job check showed that the inner drum of the clutch was misaligned in relation to the outer drive ring. The extreme side loads exerted on this engine's flywheel and crankshaft caused the rear main bearing to seize the full length of its bore. The misalignment generated so much heat that both the crankshaft forging and cylinder block casting cracked and were complete losses.

Alignment of air clutches is critical. The higher the air pressure in the boot, the closer the alignment must be to keep the side loads within safe limits. Misaligned air clutches can cause failure of any member to which they are fastened, be it a diesel engine, a torque converter, pump, or some other attachment.

In another case, several diesel engines powering excavators equipped with torque converters

experienced rear main (thrust) bearing failures. The front thrust flange of the rear main bearing became badly scored and in some cases broke off completely. Engineers found that the power train design allowed the torque converter to exert a linear pull on the crankshaft with thousands of pounds of force under full load conditions. The excavator manufacturer changed the design to include a thrust bearing that absorbed the pull of the torque converter and eliminated further bearing failures.

Improper shimming caused several thousands of dollars damage to another new engine on a drilling rig. This engine was driving through a coupling into a torque converter, and the torque converter was driving into an air clutch. The coupling between the engine and the torque converter was not properly shimmed to allow the crankshaft to float. Instead, the crankshaft was pushed forward with great force completely breaking off the rear flange of the rear main bearing.

The engine was a complete loss because the crankshaft broke through the web adjacent to the rear main bearing. The cylinder

## Get Long-Time Positive Action with **LIPE TC** **Constant Capacity Clutch**

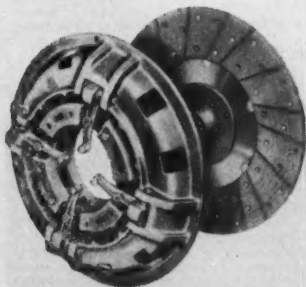


Full torque capacity for the entire life of the friction material! The TC non-adjustable, spring loaded, dry-plate clutch compensates for fading pressure of expanding springs. The toggle linkage maintains full pressure . . . smooth, chatter-free engagement.

A massive plate, finned for rapid radiation, is cooled by effective currents of air,

preserving friction material. Inner cooling protects chrome silicon springs from overheating, loss of temper.

Simple to maintain: No expensive tear downs for part replacement. Automatically compensated pressure eliminates frequent adjustments: Less down time, longer life and lower overall cost per hour. That's why . . . *the trend is to LIPE!*



● Write for full information on LiPe TC Clutches. Available in 15½" and 17" single- and two-plate types—torque capacity range of 400 to 4000 ft.-lbs.



# 10 of MODELS FULLER 3-SPEED AUXILIARIES

*Specify FULLER...  
Specify the MODEL  
Get the 3-speed auxiliary  
designed for your job.*

**HIGH CAPACITY... WIDEST RANGE  
OF RATIOS... OPTIONAL TOP-  
MOUNTED POWER TAKE-OFF...  
LOW INITIAL COST, LESS MAINTENANCE... AVAILABLE FROM ALL  
LEADING TRUCK MANUFACTURERS  
ON SPECIFICATION.**



*Specify  
Specify the MODEL*

*Choose from 16 Models of  
FULLER Three-Speed Auxiliaries*

**FULLER MANUFACTURING COMPANY**  
(Transmission Division)  
**KALAMAZOO, MICHIGAN**  
Subsidiary EATON Manufacturing Company  
Circle 178 on Reader Service Card

## MAINTENANCE SHOP... *continued*

block was cracked through the rear bearing web, and the rear faces of all the main bearing caps and supports in the block were severely gouged.

Engineers also found that the air clutch, fastened to the output shaft of the torque converter, was misaligned. In all probability this was responsible for complete failure of the drill rig's torque converter.

Various physical and metallurgical analyses can be made to determine if a particular crankshaft failure was caused by manufacturing defects. The type of failure also tells a lot about the cause, and gives clues that are helpful in correcting the problem and preventing recurring crankshaft failures. ....

Here are some typical crankshaft failures and their causes:

**Complete fractures.** Side loads on the crankshaft can break down the oil film in the bearing and cause seizure. High end loads on the crankshaft tend to score the thrust surfaces of the bearings, generating enough heat to reduce the bearing clearance to the point of seizure. Continued running usually will result in a jagged, complete crankshaft fracture near the fillet.

**Cracks.** High bending type loads, usually from misalignment of driven machinery, can start a crack in the fillet at the main bearing journal. Often this progresses through the web to the adjacent rod bearing journal.

**Angular fractures.** Torsional vibration normally fractures a crankshaft at a 45-deg angle. Use of torsional vibration dampers generally keeps this type of failure to a minimum, but the damper can become overloaded because of added driven equipment, or the damper can become damaged. Overspeeding often introduces additional torsional vibrations that are damaging.

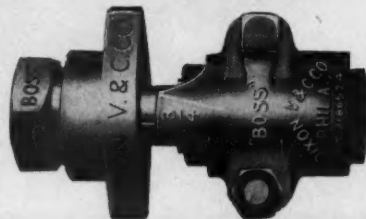
Modern, heavy-duty diesel crankshafts and bearings usually are not manufactured with defects. Physical and metallurgical tests can show whether or not the engine manufacturer is at fault when failures occur. And failures are usually the result of external forces created by conditions beyond the control of the engine manufacturer.

## Reliability THAT ASSURES Lower Drilling Costs!



### "GJ-BOSS"

#### AIR HAMMER COUPLING



The washerless coupling for all heavy-duty air hose connections to hand drills, wagon drills, drifters, jumbos. Famous for strength, durability and efficiency. Quickly connected and disconnected, with no lost or worn-out washers to replace. Compact and Heavy Types.

"BOSS" Air Hammer Coupling—same as above except Washer Type.

For lighter services—"GJ-Dixon" and "Dixon" Air Hammer Couplings.

### "BOSS" Self-Honing AIR VALVES



Used for the efficient control of air on compressors, manifolds, headers, sump pumps, etc. Strong, durable, compact. Self-adjusting, quick-opening, full flow. Male or female I.P.T.

Bronze plug automatically hones to perfect seal against harder metal of valve body.

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**DIXON**  
*Valve & Coupling Co.*  
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BRANCHES—CHICAGO, BIRMINGHAM, LOS ANGELES, HOUSTON  
DIXON VALVE & COUPLING CO., LTD., TORONTO, Associate Companies  
Burkitt Company, Inc., Quakertown, Pa. Precision Drain Steel Company, Camden, N.J.

Circle 209 on Reader Service Card  
**CONSTRUCTION METHODS**





**Grade with inch-close accuracy** by loading from the bottom with scraper action. Change depth of cut by rolling bucket forward or backward while riding on the exclusive Skid-Shoes.

## *Famous* **Four-in-One** unlimited job range... now in a **¾ yard** economy size!

**For thousands of dollars less than ever before** you can have the exclusive Four-in-One and its extra profit potential. With either the International® T-340 or the powerful new TD-340 Diesel, you get earning capacity you never could get before in a ¾-yard rig.

**The Four-in-One is so much more than a loader** ... it's a carry-type scraper, a clamshell, and a bulldozer, too! Simply move the machine selector

**Spot-place your loads** ... increase your reach by dumping from the bottom. Gravity draws out sticky materials that clog the corners of conventional buckets.



**Open the bucket all the way** and you have an efficient bulldozer. Proper curvature of moldboard, which also serves as the back of the bucket, gives a "live" rolling action.

lever to match the tool to the job. You handle a wider range of work than ever before possible with a tractor loader this size.

**You get more power** than with other crawlers in this size class ... 47 hp\* for the T-340 and the TD-340 Diesel. Greater power and higher working speeds allow you to outwork all other ¾-yard loader tractors. Fast Reverser gives you five speeds coming and going, with a 22½ per cent speed increase in each reverse gear range. Operating costs are low because of famous International tractor rugged dependability and proven fuel economy.

\*Maximum engine horsepower at standard conditions.

**Multiply your job range by four!** Broaden your profit opportunities. See your IH dealer for a demonstration of T-340 or TD-340 Four-in-One extra earning capacity today.

International Harvester  
Co., Chicago 1, Illinois

Drott Manufacturing Corp.,  
Milwaukee 15, Wisconsin



**INTERNATIONAL**  
**DROTT**

**"Surround" loose materials** instead of chasing them. Clamshell action grabs a full bucketful cleanly and quickly ... and your tractor never moves from one spot.





Portable Lima Austin-Western 101-SE crushing plant spews pit-run stone and gravel into mobile surge bin.

*Lima A-W Portable Crushers deliver*

## RELIABLE HIGH OUTPUT!

Designed and built for high output under *rugged* operating conditions, this portable Lima Austin-Western crushing plant is *ready* to pick up and go on a moment's notice. It belongs to the Williams Brothers Asphalt Paving Company, Ionia, Mich.

### Reduced tonnage costs

They say, "It's a reliable high-output mobile rig that's been doing a very dependable job for us in widely separated locations throughout southern Michigan."

"It's not a complicated piece of equipment. Only minimum maintenance has been required. It's easy to adjust to meet a wide range of rigid specifications in pit or quarry work. We find that the outfit's one man, central

control also helps us to reduce costs per ton."

The 101-SE is a completely portable, self-contained unit designed and built for rapid transport from job to job. High-speed production of construction materials near the job greatly reduces hauling time and costs.

### Maintenance reduced

Diesel power operates crushers and electric generator; all other operations are electric. Simplicity of transmission eliminates troublesome clutches, chains, sprockets and gearboxes . . . reduces maintenance, increases tonnage profits.

There's a portable or stationary Lima Austin-Western crushing and screening plant just right for your needs. Investi-

gate—see your nearby Lima distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



Stationary installation—Lima A-W line includes jaw and roll crushers, matching screens, elevators, conveyors and bins.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA AUSTIN-WESTERN** Crushing, Screening and Washing Equipment  
**BALDWIN · LIMA · HAMILTON**  
 CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO



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330 WEST 42nd STREET, NEW YORK 36



McGraw - HILL

Longcree 4-3000

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# Methods Memo...



4¢ FIRST AUTOMATED POST OFFICE IN THE UNITED STATES 4¢

## Postal Honor for an Unusual Building

The February issue of CM&E contained a story describing the construction of a post office building in Providence, R.I. It was erected by the Gilbane Building Co. The unusual 126,000-sq ft structure is covered with a huge barrel-arch roof that called for some tricky construction techniques. The building will house the world's first fully automated mail handling facility.

This month the U.S. Post Office Dept. also is paying tribute to this project. A special stamp will be issued on October 20 to commemorate the opening of this post office. The 4¢ stamp will show an architect's sketch of the building and will be printed in red and blue.

## Safety Glows

Construction crews with a glow on may be a step forward in insuring safety during darkness. Special reinforced Fiberglas hard hats manufactured by the Fibre-Metal Products Co. of Chester, Pa., produce the blue-green glow in the dark. And Malan Construction Corp. of New York City has distributed these hats to its entire field force working on an expansion project at the General Motors plant in Wilmington, Del. Response from the field on the phosphorescent caps has been good, and Malan is planning to replace all existing helmets with the new ones. The light-blue helmets are recharged in just 5 min by any strong artificial light or by exposure to sunlight.

## New Concrete?

Glass fibers may become a major ingredient of concrete where light weight, corrosion resistance, absence of a magnetic field, and electrical resistance are important factors. Such glass fiber concrete can be used for both reinforced and prestressed applications. The process for making the concrete is patented and was developed by Solomon Goldfein of the U.S. Army Engineer Research and Development Laboratories at Fort Belvoir, Va.



## Home-Made Home for a College

Nearly a decade ago a group of amateurs first tried their hand at construction, and they're still at it. The group's members are students and teachers at Marian College, a Roman Catholic institution in Poughkeepsie, N. Y. They work under the direction of Brother Nilus, a faculty member, and are erecting their own campus buildings.

They've completed three buildings already and are working on the fourth—a split-level administration office with a 250-ft-dia circular roof. Most of the structures are reinforced concrete. Thus far the brothers have used more than 2,000 yd of concrete with Placewel admixture.

Brother Nilus also is quite a hand on machines. He started out with a hand-operated crane on a 4-cyl Mack truck, which he bought for \$3,000. To this he added an old truck motor and mechanical controls for easy hoisting. Recently he bought another second-hand crane.

Construction work is geared to the available manpower. During the summer the crew sometimes includes as many as 60 brothers. And whenever Brother Nilus has a problem, he seeks the advice of professional architects and engineers. A constant adviser of his is A. A. Abdalian, a New York City engineer.



# Construction Methods AND EQUIPMENT

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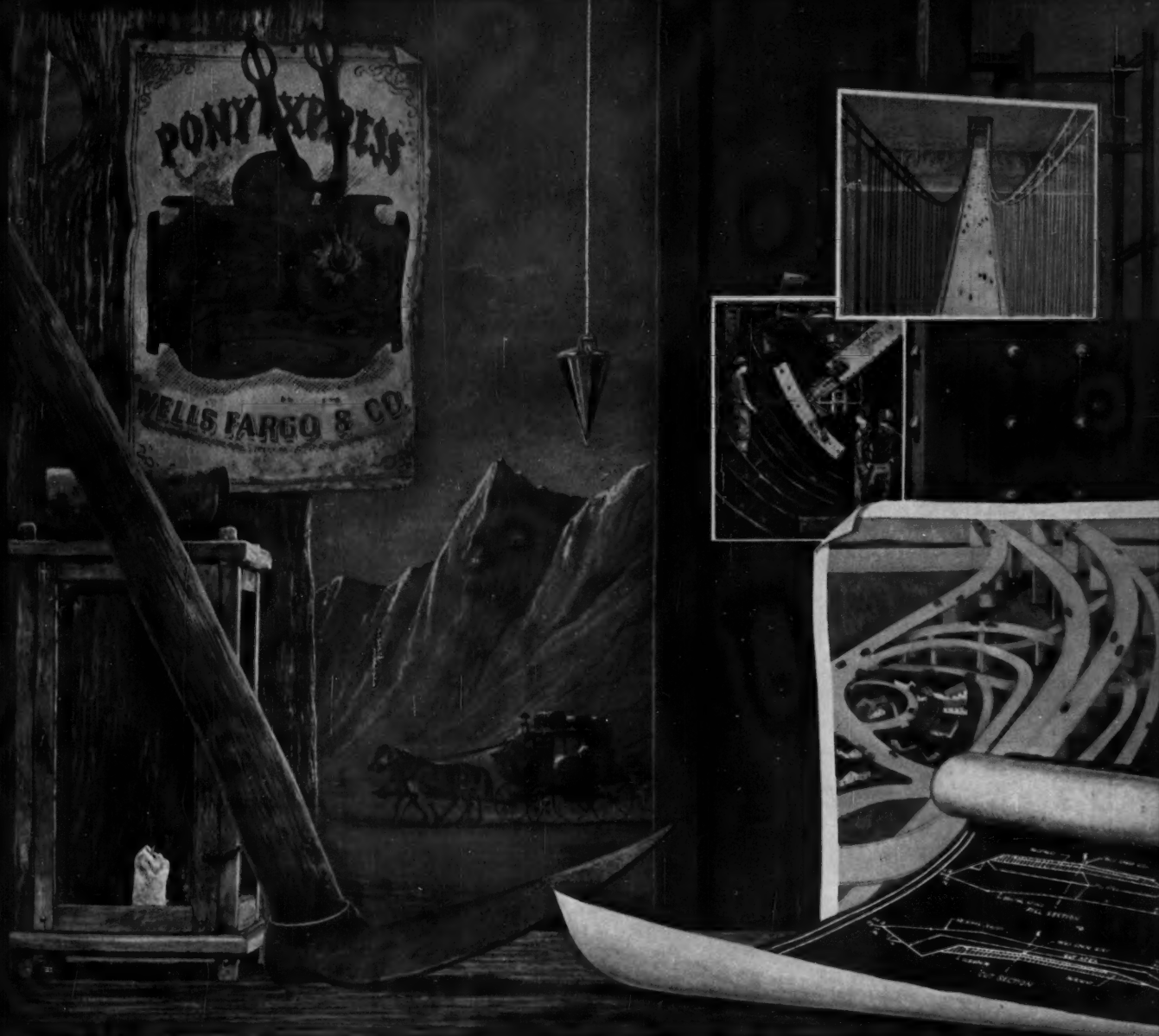
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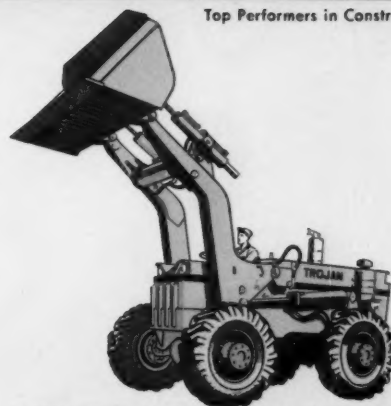




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